



FRIDAY, JULY 3.

Convention of the American Society of Civil Engineers.

As stated in our brief notice of last week, the annual convention of this society met at Deer Park, Md., in a large hotel at the summit point of the Baltimore & Ohio Railroad, some 2,750 ft. above the sea, on Tuesday, June 24, about 140 members and 60 ladies being in attendance. The attendance was about the same as at the Buffalo convention of last year, in spite of the less accessible location. The hotel is a very large one, and had just opened for the season, so that the party were almost entirely by themselves.

FIRST DAY.

The full and careful papers of Mr. E. B. Dorsey on "English and American Railroads Compared," and of Prof. T. Egleston on "The Cause and Prevention of the Decay of Building-Stones," occupied the whole of the morning session. As we hope to present a fuller summary of both these papers, we omit them for the present. An interesting statement, however, was that the Egyptian obelisk in New York is disintegrating so rapidly that in 15 years, if not placed under roof, it will be beyond repair. After heavy frosts, multitudes of small pieces, from the size of a pea upward, can be picked up around it.

The afternoon session was devoted to reading and discussing the committee report on preservation of timber, summarized in our issue of June 12. Nothing of especial interest was brought out in the discussion, which consisted largely of questions.

In the evening the President, Frederick Graff, of Philadelphia, delivered his annual address, giving a summary of recent progress in engineering works, a portion of which, including the parts of most direct interest to railroadmen, is reprinted in another column.

SECOND DAY.

The convention met at 10 a. m. Mr. Francis Collingwood read a paper on "The Preservation of Forests," the committee on preservation of timber having turned over that part of their subject to him. Mr. Collingwood found:

"1st. The supply of white pine in the United States is certain to be exhausted before 1900, and good judges predict the same result for the Canadian supply. The price in the last 25 years has about trebled at tidewater. It can be replaced by other pines from Canada and the West, or by other soft woods.

"2d. Of Southern pines, at the present rate of consumption, there is stated to be 150 years' supply. Even if this be greatly underestimated, the geometrical increase in the population of the country and the corresponding increase in consumption of timber, together with the immense and inevitable losses by fire, seem certain to reduce this limit.

"3d. The supply of spruce in the United States east of the Mississippi is not fully given, but there would seem to be not over 25 years' supply. There are, however, large supplies of this and other soft woods to be drawn from in Canada and the West.

"4th. Of hemlock, the supply in the East is about the same as that of spruce. It will soon be exhausted in Pennsylvania, New York and the Eastern States. The price has about doubled in 25 years, and an advance in price sufficient to warrant transportation will bring large supplies from distant points.

"5th. Of hard woods, black walnut began to be used extensively less than 25 years ago, and the price has advanced to \$110 per M. at wholesale. The supply is being rapidly exhausted. Ash has more than doubled in price, and oak also, in the same time.

"The supply of large timber in all these is destined to rapid extinction in the older settled districts. The supplies to be drawn upon are so great that we cannot predict a famine, except in some of the species. We can say that prices will continue to advance, as timber is brought from greater distances and the cost of transportation is increased.

"So far as we are concerned, as engineers, the matter becomes one simply of cost; and in this view alone it is evidently worth our while to economize in the use of timber. As a matter of ethics, however, something more is due from us. It is our bounden duty to try in every way to prevent the terrible losses of timber by fire. Our locomotives are responsible for an immense amount of this mischief, and the fact is discreditable to the profession. In cutting and burning the way for new lines through wooded countries, also, forest fires are frequently started. In pursuit of our duty we come in contact with the backwoodsman, and we can spread sound knowledge as to the sure profit eventually to result from the preservation of the forests, and particularly of the large timber, and inculcate greater care in brush burning and the use of fire in other ways in the woods.

"We can also point out the profit that may be expected in many parts of the country from the cultivation of certain kinds of wood, particularly on ground which would otherwise be waste. As engineers, we are called upon to study the subjects of water supply, and the effects of floods upon structures, and in causing changes in streams, etc. Now, however much opinions may vary as to the effect forests may cause by inducing local climatic changes there can be no question as to their efficiency as conservators of the water supply of the region where they are, and of their tendency to equalize the flow of streams and prevent floods. The public at large certainly need education upon this very important subject. The great unknown factor is waste, and we in common with all good citizens are interested in the introduction of some thorough system by which this great wrong shall be done away with. If this be done, and reasonable care be taken to replant forests, and circumstances warrant the expectation that it can be done with ease, we may safely rely on an abundance of timber for generations to come."

Mr. Collingwood's paper was discussed at length. Prof. Egleston and others urged the importance of timber culture. Mr. A. M. Wellington said he thought that while efforts to preserve timber were commendable and the waste inexcusably great in many parts of this country, yet there is, nevertheless, no danger of serious public inconvenience from a failure of the timber supply. A very large proportion of our present consumption is in excess of what sound public policy and true economy would dictate, and far greater per head than in any other civilized country. During four years' residence in Mexico he had been much impressed with the extent to which the difficulties of even an almost total absence of timber supply could be overcome. While the first cost of structures was greater where wood is not used, their permanence, beauty, comfort and safety from fire are greatly increased. Even so much as five-sixths of our present timber consumption might stop without permanent injury to our

industries, as stone, brick, concrete and iron would be used instead.

Mr. E. P. North was sorry to hear the view expressed that lack of timber supply was anything but a very serious drawback. The inconvenience in and injury to Mexico were almost beyond belief. Mr. Wellington responded that this was undoubtedly true as respects such an extreme case as Mexico, where timber once cut never grew again, but our reproductive timber lands, worthless for other purposes, were of such immense area that we were sure of a moderate supply forever, and a change from an immoderate to a moderate use of timber would not be so great a public evil, even at the expense of an increased cost of timber, as to be a legitimate cause for alarm.

Messrs. Latimer and Woodbury followed in remarks supporting this general view. Mr. Woodbury stated that the cost of insuring many mills and other structures was increased far more than to cover the saving by using the more perishable material. He thought that proper means of ventilation, so as to save timber from dry rot, was one of the greatest needs in ordinary building.

Mr. Collingwood urged that although timber was, no doubt, used to excess, yet that reckless waste was always an evil. The forests were here, and it was our duty to preserve and utilize them to the utmost.

A very warm discussion on bridge-building details then followed for the remaining three hours of the session, brought out by a paper of Mr. John M. Wilson, Engineer of Bridges and Buildings, Pennsylvania Railroad, with some discussions of other papers, which from its nature is difficult to summarize, being of a highly technical character. The mooted question of steel or iron was one of those most earnestly debated. Messrs. Cooper, Collingwood, Roberts, Sellers, Katté, Pegram and others took part in the discussion, which any brief summary would do injustice to.

The afternoon was given up to an excursion to Cheat River, tendered by the Baltimore & Ohio Railroad, and the evening to the business session, which convened at the late hour of 9 o'clock. The presentation of the report of the committee on "A Uniform System for Tests of Cement" was followed by a minority report from Don J. Whittemore, member *ex-officio* (as President when the report was prepared) of the committee, earnestly objecting to certain passages in the report as tending to check improvement. These passages have been recently interpolated, and fix the limits of maximum and minimum tensile strength within which some cements which may be called good fall. The apparent purpose was to prevent proscription of cements which show low tensile strength but are otherwise good, but the opposition took the ground that it was dangerous and an impediment to progress to fix officially limits within which any cement might be good, *i. e.*, good enough. In the words of Mr. Whittemore, "it takes the heart out of a man who is trying to make an 80-lb. cement to have it formally declared that 40-lb. cement is good." Mr. W. P. Shinn and others urged that the report be remanded to the committee with request to cut the parts objected to from the body of the report and add it as an appendix. This, however, was opposed and ultimately defeated by the convention, on the grounds that it was discourteous to the committee, and that information on questions of fact had no such tendency to discourage progress. On the following morning, however, Mr. W. P. Shinn moved that the convention adjourn to go into business session to reconsider the question, and after remarks by Professor Egleston as to the discredit to the Society of not being able to agree on a report on such a subject, and some further discussion of the merits of the general question, the action of the previous evening was finally reversed by a vote to return the report to the committee with request to make the change above noted.

Mr. A. M. Wellington then presented a resolution for the appointment of a committee of five on the relation to each other of the form of rails and wheels, for what distance and at what points it was expedient that they should coincide in section so as to give a continuous line of contact, and for what distance and at what points it was not desirable that they should so coincide. He stated that proceedings in recent years in the Master Car-Builders' Association, while involving no official action, had nevertheless created a not unreasonable impression that a position had been taken on the subject by the car-building interest which has not as yet been defended by argument upon the merits of the supposed position, although it had been seriously attacked. The Society of Civil Engineers seemed a peculiarly suitable body for the proper consideration and discussion of a question of this kind, which was one of great public importance.

Mr. Charles Latimer seconded the resolution, and urged that it be extended to include a recommendation of standard rail sections, but on objection that so large a subject was too much to attempt at once, withdrew the suggestion and the resolution passed. Under the constitution the resolution goes first to the board of directors and then to letter ballot before it is finally acted on.

Mr. Wellington then brought up the question of broadening the basis of the Society to include local sections by assimilating with it the various local engineering societies in our leading cities, as suggested in a recent paper on "The Permanent Basis for a National Engineering Society," and moved that a committee of seven be appointed by the President to consider and report on the subject, with power to confer directly with members of the Society and with officers of the local societies by circular or otherwise. Mr. E. L. Corthell and others seconded the resolution, Mr. Corthell urging that some movement of the kind seemed very desirable, and should at least be fully considered, as it seemed calculated greatly to advance the interests of the profession.

Mr. E. P. North moved an amendment, which was accepted, that the committee be instructed to consider if in any other way the policy of the Society can be advantageously modified. He urged that the mining, mechanical and electrical engineers had split off from us and that the policy of the Society was too narrow. Professor Furrtes, Charles Latimer and others spoke in favor of the resolution, which was then passed with two or three dissenting votes. The committee has not yet been appointed.

Messrs. J. Herbert Shedd, M. J. Becker, Rudolph Fink, D. J. Whittemore and Col. Geo. H. Mendell were then appointed a committee to nominate officers for the ensuing year, and the business meeting adjourned, between 11 and 12 p. m.

THIRD DAY.

The close attention to business of the two preceding days made the members somewhat less inclined to continue work as closely on the third day, and the room was at no time full, informal "sections" being organized on the piazzas for the discussion of subjects of more immediate interest to those taking part in them than the formal proceedings. As often happens on the last day of such meetings, however, a greater number of valuable papers were read and discussed than on any of the preceding days.

Papers on the mechanical filling-in of details on topographical maps by John A. Ockerson, of St. Louis, on guard-gates at Point street bridge, Providence, R. I., by W. D. Bullock, and on submerged wires by Clemens Herschell were first read and brought out little discussion, largely because the attendance was at first small.

Mr. E. L. Corthell read a paper on "Railroads and Canals." He said that experience on the Belgian canals demonstrates that they cannot compete with railways. Railroad men 30 years ago concluded that canals cannot hold their

own. Since then the railways have greatly increased their carrying power, while the canals have been improved but little. A standard freight car has been determined upon that will carry 60,000 lbs. It is proposed to galvanize the Erie Canal into new life by an additional expenditure of \$3,000,000 by the state of New York, notwithstanding that the doom of canals is seen in the handwriting on the wall. They must succumb to the modern system of railroading.

Mr. Corthell argued in favor of the advantages of ship railways over ship canals. The latter must always be more costly, and at the same time inferior to ship railways.

E. P. North, of New York, argued in favor of the enlargement of the Erie Canal. He said the construction of the proposed Chesapeake & Delaware ship canal and other similar enterprises will add to the commerce of the world. He also commended the Tehuantepec ship railway project. Ship railways, he said, do not have an advantage over ship canals in reduction of expense of moving tonnage.

The question of the standard test of cement was again brought up from the Thursday evening session, and acted on as above noted.

A resolution was adopted to present a memorial to Congress asking for an appropriation of \$10,000 to enable the Secretary to make the tests of structural material to be presented to the United States Chief of Ordnance, and several members remarked on its great and admitted importance and urged the use of any individual influence. A paper on the mouth of the Mississippi, by W. K. Hutton, was also read.

Capt. O. E. Michaelis, of the United States Ordnance Corps, read a paper entitled, "Can We Make Heavy Guns?" He argued forcibly in favor of cast-steel guns, and urged that there was no necessity for the government to construct works of its own. An assured market to private manufacturers was all that was needed.

Prof. Egleston, of Columbia College, gave an interesting description of heavy gun making.

Mr. Charles Latimer read a paper on railroad organization. He sketched the rise and progress of railroading. The future of railroads, he said, is a problem. Pools have failed. States have attempted to regulate abuses of railroad systems. Railroad commissioners will probably be a permanency, and will be recognized in every state. Incompetency at the head is wrecking half the railroads in the country. A railway manager should first have learned to obey before he gets the command. It was desirable that there should be two main departments, transportation and engineering, each reporting directly to the President or General Manager.

The aeration of water was discussed by Chas. B. Brush, of Hoboken, N. J. He described his treatment of the water supply to get rid of green scum and bad taste. Deficiency of oxygen in the water was the cause of the troubles, and he found the same fault existed at the Baltimore reservoir on his visit last Monday. The water at Baltimore is improved by keeping it in motion, but is not yet what it should be. Mr. Brush keeps the water at the Hoboken reservoir in constant motion. Sanitary experiments are in progress to define the causes and remedy. Vegetable organisms are responsible for the bad odor and taste.

Prof. S. W. Robinson, of Ohio State University, read a paper on the vibration of bridges, and Mr. Wm. P. Shinn read a paper on the power of brakes for railroad freight cars, giving the results of some valuable and important experiments on the American Brake Co.'s brake gear recently made under his direction. He said that while great improvements have been made in almost every other department of railroading, most freight trains are controlled with the same kinds of power that were used 30 years ago, and that it was time that the question was taken hold of in earnest.

Mr. Chanute pointed out the great difference between our railroad organizations and European. Trained engineers were in charge of all the maintenance departments as is now the increasing practice here. A recent investigation had shown that among the most prosperous roads 90 per cent. had never trained as engineers in the responsible managing positions.

Mr. T. H. Johnston, of Lima, Pa., read a paper on the strength of columns, which, with a brief discussion, closed the technical proceedings.

Resolutions of thanks were unanimously voted to the Baltimore & Ohio Railroad Co. and its officers, to Mr. Mendes Cohen, the Chairman of the convention, and to the citizens of Baltimore for courtesies to the Society Monday. The convention finally adjourned at 5 p. m.

The place for holding the next convention will probably be determined at the annual business meeting next January, in New York. The members all agreed that the Deer Park convention was the most satisfactory ever held, and that much more business was transacted than on any previous occasion. The Society has an invitation to meet next year in London, England, at the time of the American Exhibition, but it is not thought that it will be accepted.

As one of the Baltimore papers truthfully said:

"The society was pre-eminently a working body. It has held lengthy sessions, and paid close attention to all the papers read and the discussions which followed. The members talked engineering in the recess of the convention, and were in no sense a pleasure-seeking company. The ladies took care of themselves very well, and enjoyed their visit. Mr. T. Harrison Garrett and other Deer Park cottagers placed their carriages at their service, and there was dancing in the evening."

The annual banquet in the evening, after adjournment, was also a very successful affair, participated in by about 150 members and guests. Messrs. Mendes Cohen, Vice-President Samuel Spencer, of the Baltimore & Ohio Railroad, Don J. Whittemore, Frederick Graff, Julius W. Adams and others responded to toasts.

EXCURSIONS.

On Monday afternoon, June 22, a railroad and steamboat excursion to various points of interest in Baltimore harbor was made by invitation of the Baltimore & Ohio Railroad Co., under the escort of David Lee, General Superintendent; C. K. Lord, General Passenger Agent; W. N. Bolling, Engineer, and other officers of the road. The party visited the terminal facilities at Locust Point, including the large elevators at that point, the large wooden dry-dock, Fort McHenry, Fort Carroll, and landed at the large reservation on the water front at Curtis Bay, about 9 miles from Baltimore, which the Baltimore & Ohio has secured in advance against future needs, but which is as yet occupied only by a single dock, chiefly for the use of excursion parties. A display of especial interest was the local fire department organization at Locust Point, which was called out by a special alarm, and made an excellent showing. In addition to the usual stationary pumps and steam-tug service, the fire service includes special fire pumps mounted on top of some of the yard engines. Seven streams were brought into action very quickly. A visit was also made by carriages to the Baltimore (Gunpowder) Water-works by some 20 of the engineers, under the escort of Mr. Robert K. Martin, Chief Engineer.

In the evening the entire party attended the Academy of Music, at the invitation of the Baltimore & Ohio Railroad Co., and on the following morning left by special train, consisting exclusively of private cars and parlor or sleeping cars, for Deer Park, stopping an hour at the Mt. Clare shops, and passing over the old line, where various points of interest were examined, notably where Peter Cooper's early engine had its

race with a horse and (by an accident) was beaten, and the old planes operated by horse-power before the advent of the locomotive. Two of the old "grasshopper" engines, having vertical cylinders driving two one-sided walking-beams and thence by gearing actuating the drivers, are still in use for switching purposes in the Mt. Clare yard, and attracted special attention. Their appearance in motion is ridiculously similar to a grasshopper's, but they still do very good service. They were illustrated in the *Railroad Gazette* for Nov. 17, 1876.

On Thursday afternoon an excursion was made to the Cheat River grade and Kingwood Tunnel (the only excursion which interrupted the proceedings of the convention), where the old cast-iron Tray Run viaduct, one of the first works of the kind in the United States, if not the very first, and the first important design by Albert Fink when a very young man, was examined with special interest. It is now being replaced by a modern viaduct on an improved alignment. The old 10 per cent. temporary line across the mountain at Kingwood Tunnel, which was used for the trains about 1852, while the tunnel was being constructed, was examined with special interest, as having been at the time, and indeed still, an example of unequalled boldness.

Saturday forenoon, after adjournment, the members going East were reconveyed by special train to Baltimore, and carried around the city by the now little used track to the ferry, which has heretofore afforded direct connection with the Pennsylvania tracks. Here the Pennsylvania Railroad had placed a special train of three coaches, which was put through to Philadelphia and New York on a "limited" schedule, doing some exceedingly fast running, as had also been done during the morning on the Baltimore & Ohio lines. On both roads 15 to 18 miles in as many minutes were run by the timing of members, and three or four successive miles in 57 to 58 seconds each. The unexpected courtesy of the Pennsylvania road, however, in running a special train, was especially appreciated, as by the usual process of depletion the party had been much reduced by the time it reached Baltimore, so that it might have been carried by the regular trains without other inconvenience than delay, and there seemed less reason to expect such an attention than if the convention had been held on its line. An informal meeting of the passengers was therefore held on the train, and the following resolution passed unanimously:

Resolved: That the thanks of the American Society of Civil Engineers, and especially of those members here present, are due and tendered to the Pennsylvania Railroad Co. for their unsolicited courtesy in placing a special train at their service for returning to New York, and that the General Manager of the company, Mr. Chas. E. Pugh, be furnished a copy of this resolution and informed that the courtesy is the more highly appreciated in that it could be the less reasonably be expected, as tendered only to a portion of the membership in attendance at the convention.

Mr. A. M. Wellington was appointed Secretary of the informal meeting and instructed to forward a copy of this resolution to the General Manager, with the thanks of those present.

Progress of Engineering in 1884.

The following is the part relating to railroads, bridges and tunnels of the annual address of the President of the American Society of Civil Engineers, Mr. Frederick Graff, at the late convention at Deer Park, Md. After speaking of the rapid progress now made in inventions and the arts, so that even a summary for a single year has interest, although often, as in the past year, no positively new principle might be developed, Mr. Graff said:

The progress made in railroad construction in this country has been less than for several previous years; the number of miles of new roads built, it is stated, did not exceed 4,400, upon about 166 different roads, being an average of 26 miles to each. This is less than in any year since 1879.

There has been considerable advance made in the rate of speed upon most of the principal trunk lines; we have to record the fastest short distance, ordinary daily travel, made in the world to the Baltimore & Ohio road, on that part of its line between Baltimore and Washington, where a distance of 40 miles is daily covered in 45 minutes, being an average rate of 53 1/3 miles per hour.

A speed equally wonderful, when the long distance traveled is considered, is being daily accomplished upon the Pennsylvania Railroad from New York to Chicago, a distance of 912 miles; the average running time made is a little over 38 1/2 miles per hour.

From a table recently published we learn that the Pennsylvania road runs trains from New York between Jersey City and Germantown Junction, 84 miles, at the average rate of 49.4 miles per hour. The fastest English trains for about the same distance (80 miles) are run at the rate of 47 1/4 miles per hour. Upon the French roads, for runs of about the same distance, the fastest record is 44 1/2 miles per hour.

By way of comparison of the early and present locomotives and speed of travel, the Baltimore & Ohio Railroad, over whose tracks we have been brought to this spot, will afford a good example.

The first locomotive built in this country to carry passengers was constructed by the late Peter Cooper, and commenced running in 1830. Its weight was less than one ton, drawing one car, containing 36 passengers, at the rate of 13 miles per hour.

To-day trains pass over the road of the same company between Baltimore and Washington at the rate of 53 1/3 miles per hour.

The last and heaviest locomotive built has just been finished by the Baldwin Works, Philadelphia, weighs about sixty-four tons, has 10 driving-wheels, and a capacity to draw 500 tons up a grade of 105 ft. to the mile.

Cable roads for street traffic are increasing in number and are now in use in San Francisco, Chicago, Detroit and Kansas City. Several lines are being constructed in Philadelphia; the general plan which originated in San Francisco in 1873, with modifications to suit the particular locality, is the one usually adopted.

The elevated road just completed in Brooklyn is, I believe, the only one of that kind finished during the past year.

The cantilever principle for long-span railway bridges is much in favor. It is believed that the first of any prominence built upon this arrangement was erected under the direction of one of our fellow members, over the Kentucky River, on the line of the Cincinnati Southern Railway. This has a total length of 1,125 ft., and a clear span of 300 ft., and was finished in the year 1877.

The Niagara cantilever bridge was re-tested during the year and has shown remarkable immunity from changes, giving increased confidence in its stability and the correctness of the principles of its construction, which have been so fully elucidated in the interesting and valuable paper recently read before the society by our fellow member Mr. C. C. Schneider.

The grandest work of this character is the bridge now building over the Frith of Forth. The construction of a bridge of 22 spans, two of which are of the enormous length in the clear of 1,700 ft. each, is certainly a most formidable

undertaking. The compression members of the spans will consist of tubes, composed of steel plates bent to form, and properly united by H-beams; they will vary in diameter from 12 to 8 ft. The tubular form, of course, presents no novelty of principle, it having been used in the St. Louis, and other structures, but the size is unprecedented. The large piers consist of four cylinders each, of 70 ft. diameter at the lower cutting edges; they are sunk by the pneumatic system. Serious difficulties have not been encountered in sinking them to the depths of 68 to 88 ft. No new methods are employed, and none that were not successfully used at the St. Louis and the East River bridges, and are at present followed at the new bridge building across the Susquehanna at Havre de Grace for the Baltimore & Ohio Railroad, differing, perhaps, only in the details of air-locks, and means of removing the excavated earth, and supplying its place with concrete.

A cantilever bridge has also been completed across the St. John's River, to connect the Intercolonial railways with those of the United States. It has a clear span of 479 ft.—9 ft. more than that at Niagara Falls. This completes a link whereby the time between New York and Halifax can be shortened 23 hours, and will eventually be the means of reducing the trip from New York to Europe very materially. The work of sinking the pier foundations for the bridge now building at Havre de Grace for the new line of the Baltimore & Ohio Railroad is being prosecuted with much vigor, and presents examples of the most advanced practice in the pneumatic method of sinking caissons. This work is, as you are aware, being carried forward by members of our Society.

The Tay bridge is now being built upon improved plans and on a new alignment. The resources now at the command of our bridge-builders, modern improvements in the manufacture of steel, with more reliable knowledge of its powers of endurance and resistance, make it possible to overcome difficulties that within a few years past would have been considered, if then proposed, as almost absurd.

It is scarcely necessary to point out how much has been done to increase the security of such structures, and modify their cost by the now very general use of improved testing machines, those belonging to the government and such as are owned by bridge manufacturers and others.

This society can look with satisfaction to its efforts in influencing and fostering the use of such means.

Next in order to the transport of railways over rivers comes to be mentioned the means of carrying them under streams and through mountains.

Of the former the tunnel under the Mersey, between Liverpool and Birkenhead, has been carried to completion. Operations were begun in 1830. Four thousand two hundred feet of its length is under the bed of the river. It is through red sandstone, and was driven by means of the Beaumont machine. There is a drainage tunnel under the bed of the road 7 ft. diameter, and a similar passage of the like diameter near the top of the main tunnel for artificial ventilation.

A tunnel for the use of the Great Western Railway, of about 4 1/2 miles long, was commenced under the Severn in 1873. Work was carried on with but little difficulty until the drift was within about 180 yards of meeting. A large influx of water took place in 1879, thereby delaying the work, now, however, approaching completion.

The channel tunnel, which has caused England so much uneasiness, has been driven on the British side for a distance of about 1 1/2 miles, and on the French side almost half a mile. It is found by more than 9,000 soundings that gray chalk extends entirely across the channel. Work was done mostly by the Beaumont machine, and no very serious impediments have been met with. The water so far found is in pockets, and perfectly fresh. There is but little doubt that the tunnel could be completed for the amount estimated. Work upon it is now suspended.

The greatest achievement of modern mountain tunneling is the Arlberg, reaching from Innsbruck in the Tyrol to Lake Constance in Switzerland. Headings were commenced at both ends Nov. 13, 1880, were pierced through Nov. 19, 1883, and the whole completed September, 1884. Two methods of doing the work were adopted. Upon the Tyrol side Ferroux percussion air-drills were used, and on the Swiss side Brandt hydraulic boring machine. The distance accomplished by the air-drills was 14,874 ft., and by the hydraulic machine 17,351 ft. The rock, however, on the Tyrol side was harder, and presented more difficulties than upon the other end. The work was carried on with unexampled rapidity, showing remarkable progress in the methods employed.

The following comparison with the two mountain tunnels previously constructed will show the advance made in this class of work:

	Length, miles.	Cost, per ft.
Mt. Cenis.....	7.4	\$376
St. Gotthard.....	9.3	238
Arlberg.....	6.2	180

Hydraulic wedges, consisting of rams with cutting edges, have been used successfully to force down semi-detached masses of rock in tunnels and coal-mines, to a marked extent decreasing the use of explosives.

The Metropolitan District Railway of London has constructed a new section of four miles length, much of it under the most formidable difficulties, which may be judged of by the cost, which in some parts was \$120 per lineal inch run—\$7,603,200 per mile.

Contributions.

Soda Locomotive Engines.

FRANKFORT, March 12, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your paper of Sept. 21, 1883, a new process of propulsion for traction engines where smoke, vapor and noise are to be avoided is described. As this process has been developed considerably since that time (it was only discovered in May, 1883) and put into use in various places, I think it will interest your readers to give an account of its latest phase.

The improvement in question was invented by Mr. Moritz Honigmann, of Grevenberg, near Aix-la-Chapelle (or Aachen, as it is called in Germany), in Rhenish Prussia. Mr. Honigmann is a caustic-soda manufacturer, and in seeking for an economical method of reducing the dilute soda to a solid form, he introduced a closed steam coil into the soda boiler. This coil having sprung a leak, Mr. Honigmann observed that no steam was given off from the surface of the soda solution, which led him to the discovery that the latter was capable of absorbing large quantities of steam and its contained heat without giving off vapor; or, stated in a more general way, that it was capable of storing up a large quantity of power in the form of heat without having the ten-

sion of its particles materially increased. In this respect it is in marked contrast to most substances used in motive powers such as water, air and gases, whose tension is increased in a high ratio by absorption of heat. It is not, however, alone in this peculiarity, which is shared in a less degree by sulphuric acid and some other substances. Experiment demonstrated that this capacity for absorbing heat increased in a high ratio with the concentration of the solution as shown by the table below:

Soda Solution.		Boiling Point. Degrees Fahrenheit.	Corresponding pressure in steam boiler. Lbs.
Parts Caustic Soda (Na O. H. O.)	Parts water.		
100	10	492.8	.....
"	20	422.9	.....
"	30	392.0	225
"	40	365.9	153
"	50	346.1	115.5
"	60	330.8	91.5
"	70	319.1	76.5
"	80	309.2	63.0
"	90	300.2	54.0
"	100	291.2	45.0
"	120	276.8	33.0
"	140	266.0	24.0

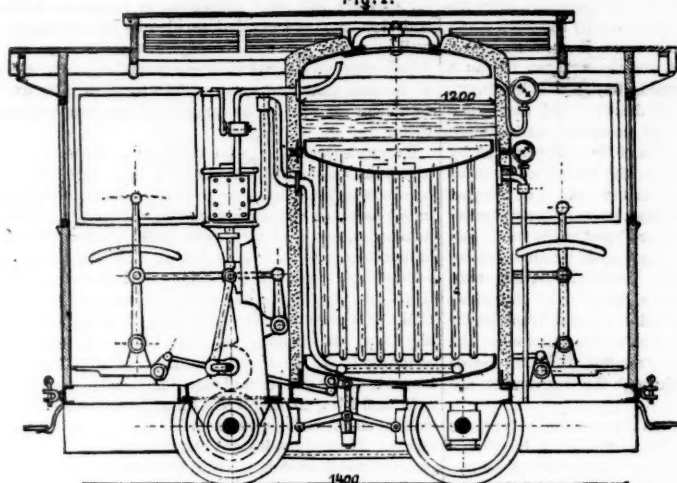
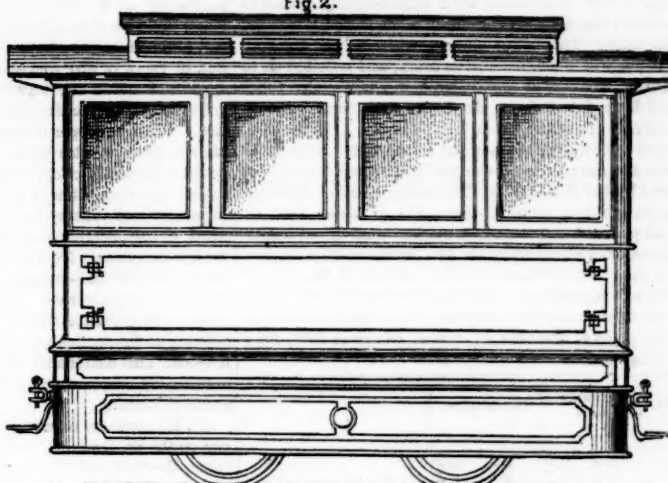
The limit of its capacity in this respect would seem to be the point where the solution becomes too viscid to allow the steam to penetrate it at all. In point of fact, the solution which is found most practical is one with about 17 per cent. of water, whose boiling point is 429°. The capacity of this solution to absorb steam is given below, where column 1 gives the working pressure carried in the steam boiler, columns 2 to 5 the percentage of its own weight which a given quantity of the solution will absorb without carrying more back pressure than given at the head of the column (which is, of course, the pressure in the soda tank at the close of the absorption), and column 6 the temperature of the steam to be absorbed before giving out its work in the cylinders:

Boiler pressure, pounds.....	Soda tank, open.	Final pressure in soda tank, 75°	Final pressure in soda tank, 15°	Final pressure in soda tank, 25°	Final pressure in soda tank, 35°	Temperature of steam absorbed, degrees Fahrenheit.....
1	2	3	4	5	6	
30	Per cent. 80	Per cent. 125	Per cent. 200	Per cent. 350		277
45	65	88	130	190		263
60	51	70	98	125		308
75	41	58	80	100		320
90	34	48	66	80		332
105	27	40	55	70		342
120	22 1/2	33	47	60		351
135	19	28	41	52		360
150	16	24	35	46		367
180	12	18	28	35		381
225	9	14	22	33		392
300	2	8	12	21		419

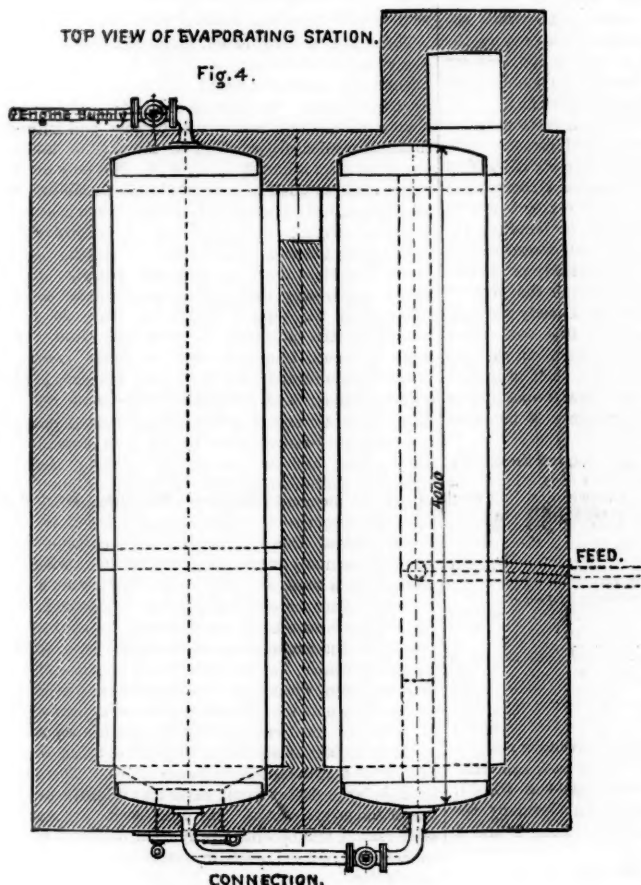
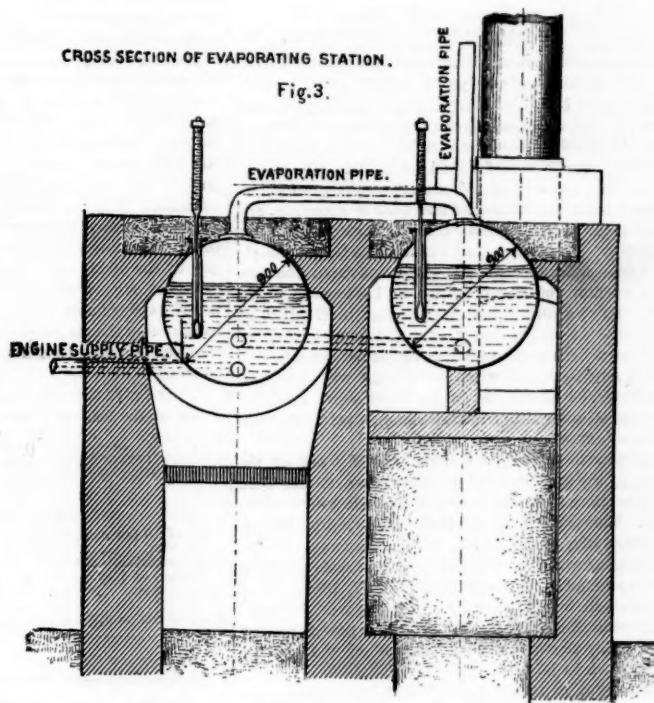
The above solution weighs about 80 per cent. more than the same amount of water. It appears, then, that if we discharge the exhaust steam of an engine carrying 120 lbs. pressure into a tank on the same containing a soda solution of 429 degrees boiling point at the start, the soda lye will take up 60 per cent. of its own weight of steam, or 108 per cent. of its own original bulk of the condensed water from the steam, while giving enough heat to the steam boiler to maintain the boiler pressure intact and causing a maximum back pressure of 22 1/2 lbs. If the water in the boiler is allowed to run down, in which there is no danger under this process, the joint weight of the soda and water on the engine will have remained constant, and the back pressure will have averaged about 12 lbs., probably not more than the usual amount caused by the exhaust of a fuel-burning engine.

The practical operation of the soda engine according to its latest developments is as follows: A suitable quantity of the properly diluted soda lye raised to its boiling point, is placed in a closed tank in intimate contact with the steam boiler filled with steam and water in the usual proportions and at the working pressure (or the water may be put in cold and the steam raised by the heat of the soda lye). Upon opening the throttle steam passes into the cylinders, does its work, and passes into the soda solution through the exhaust pipe, which ends in a perforated tube extending through the soda, the remaining heat being absorbed into the latter. The pressure in the boiler will decrease and the temperature of the soda will rise until the difference of temperature represents the work being done in the cylinders; after which it will remain nearly constant while the same amount of work is being done. If, however, we give the engine more steam, the temperature of the soda lye will be increased, and that of the boiler water also, though in a less degree, as the difference between the two must represent the work being done. On the other hand, if we shut off steam the temperatures will tend to approximate. This action makes the machine an automatic heater, responding by greater heating to the larger amount of work called for. This curious feature of the process, which goes to such an extent that on a considerable run with heavy work the temperature both of the soda and of the steam may be higher at the end than at the start, is apparently due to the greater heat storage capacity of the more concentrated lye, causing its temperature to rise as it becomes diluted, and with it, of course, that of the water in the boiler, while the absolute quantity of power stored in the two is diminishing.

The power stored in the soda and steam together must, of

CROSS SECTION OF STREET LOCOMOTIVE.
Fig. 1.SIDE VIEW OF STREET LOCOMOTIVE.
Fig. 2.

Scale 1:40.

TOP VIEW OF EVAPORATING STATION.
Fig. 4.CROSS SECTION OF EVAPORATING STATION.
Fig. 3.

Scale 1:40.

SODA STEAM ENGINE.

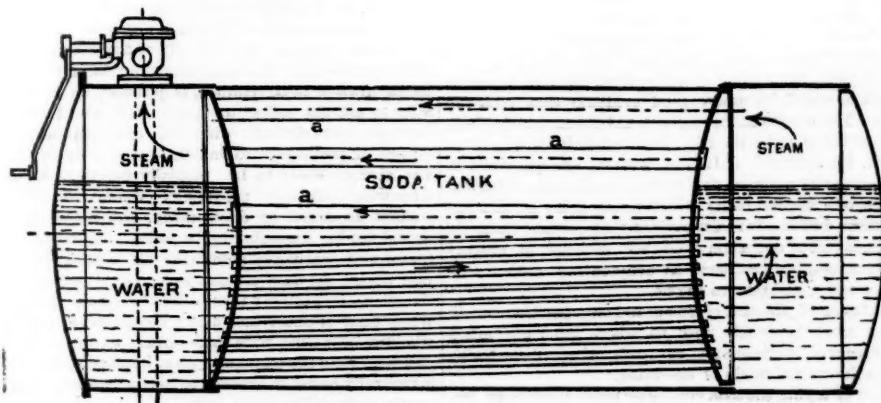
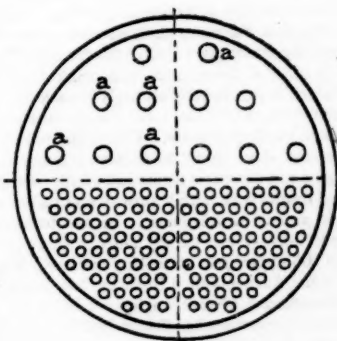


Fig. 5.



Scale 1:40.

course, steadily diminish until a point has been reached when the soda is so dilute that it can no longer maintain the difference of temperature necessary to make steam without increasing the back pressure in a still higher ratio. This point is indicated when the soda tank is open by sinking of the boiler pressure, and if closed by increase of the pressure in the soda tank above the resisting capacity of the latter.

The soda lye is now discharged and a new charge of hot condensed soda taken in. The change takes place according to the present arrangement at a fixed engine station, with 2 ordinary cylindrical boilers placed side by side, as shown by figs. 3 and 4, and with a reservoir (not shown) to contain the diluted lye. Under one of the boilers is placed the fire grate. The fire after heating one boiler passes under the other to the chimney, or may be still further used, if the heat is not entirely removed, to heat water in a third boiler for the locomotive supply at the beginning of a trip. The diluted

lye from the locomotives is forced up into the above-mentioned reservoir by opening a connection between the boiler and the soda tank of the locomotive. The charge being all out, the boiler connection is closed. The tank is then coupled to the fixed boiler over the fire, containing hot concentrated lye, and the pressure in the soda tank being relieved, the lye flows down from the fixed boiler into the soda tank. The engine is then ready for another trip. The diluted soda from the engine passes out of the reservoir into the tank furthest from the fire, and after being condensed a certain amount, determined by thermometer, it is transferred to the boiler over the fire where it gets its final preparation.

The completion of this is also indicated by thermometer, the boilers having free vents for the vapor driven off by the fire. The amount of water evaporated out of the soda per pound of coal used is a general test of the economy of the process. This has risen from 4.5 to 1 to 7.1 to 1 from the earlier

operations to the later ones. This is in itself not a brilliant result. It is to be considered, however, that the process is in its infancy. It is also to be considered that the method of heating in the boiler powerfully superheats the steam, as I will point out below, and it will be evident that the result is better than it appears. Some comparative trials between a first-class fuel-burning locomotive and a Honigmann engine doing the same work showed the use of steam by the two to be respectively as 42 to 37, which would bring up the 7.1 lbs. of water to over 8 lbs. As the advantages of the machine do not depend entirely on the economy, and as the discovery is only two years old, this may be considered a fairly good result.

Coming now to the details of the application, figs. 1 and 2 give a section and side view of one of the four dummies, which have been in use on the Aachen-Burthard tramway since last July (some of them began later). As will be seen

it is arranged very much like dummies on our street roads, except for the absence of smoke or steam vents. This one is geared up. Those built later have direct-acting cylinders placed beneath the car and are fitted with water tanks between the axles. The boiler shown, with curved top and bottom, is made of wrought iron as usual, and is bolted on to the soda tank, which is of copper, while the stub ended tubes which run down into it from the boiler and constitute the heating surface are of brass 3-16 in. thick.

In regard to this construction, the form of the boiler and its position and the nature of the materials used have been determined by the desirability of avoiding contact between the hot soda lye and wrought-iron. Up to about 280° F. with an 83 per cent. soda solution, neither cast or wrought-iron is perceptibly attacked by the lye, while neither copper nor brass is affected by the chemical action of the lye at any practical temperature. An experiment with bundles of wire of the three materials boiled for 7½ hours in a solution of a boiling point at first 285° F., and at the close 392°, gave the following results.

Iron wire.		Copper wire.		Brass wire.		30 Grammes=1 oz.
Weight.	Surface.	Weight.	Surface.	Weight.	Surface.	
117.30	150	167.42	95	101.58	86	At beginning.
101.90		167.42		101.53		At end.
15.40		0.00		.05		Loss.
9%				10000 of 1		P. c. of weight lost.

Up to 310° the action of the lye on wrought iron can be entirely prevented by introducing a certain quantity of oxide of iron into the lye which causes the formation of a protecting scale. As this dissolves at about 311° to 312° it has not been of much value in itself for soda tanks, but Mr. Honigmann has made a practice of introducing a charge of it into the soda tank after the refilling of the tank is complete and after the vent for the escape of air from the tank during filling has been closed. This is done on account of its immediate absorption of the carbonic acid gas given off from the lye, causing a vacuum of about 12 lbs. to be formed in the soda tank. This vacuum is not entirely lost until after an hour's working of the ordinary street dummies, and, of course, has a very favorable effect on the power developed.

Returning now to the drawing, the exhaust will be seen on the left of the boiler passing through a check valve and then down into the soda tank, in which it ends in a perforated coil of pipe at the bottom.

The steam pipe in this engine is taken directly out of the steam space to the cylinder, but in other cases it has been carried one or more times the length of the soda tank for superheating. This is particularly shown in a representation of an old locomotive of the Aachen-Jülich Railway, which, with diagrams showing the relative steam and soda temperatures, may be found in *Engineering* of Feb. 27, 1885. These diagrams are well worth the study of any one who is interested in this remarkable application of motive power, as they illustrate forcibly the automatic adjustment of the heating effect to the work to be done.

The latest form of railroad locomotive boiler which has been developed by Mr. Honigmann is shown by fig. 5, in which it will be perceived that the water is contained in the end divisions of the boiler, which are of wrought iron, except the tube plates toward the middle division. These and the tubes and shell of the middle division, which is to contain the lye, are to be of copper or brass, which need not be of great strength, since in the shell it has only to resist the back pressure allowed, and the tubes and tube-plates are of such forms and sizes, and so strongly stayed by their mutual action, as to offer great resistance to the steam pressure. In this boiler it is intended that the water shall circulate as shown by the arrows, while the steam generated at the front end is returned by the large tubes A through the soda tank before passing to the cylinders, being thereby strongly superheated.

It has been claimed that this form of apparatus requires excessively large heating surfaces. This would not be natural, since the heating of one liquid by another is much more rapid than by a gas; and the claim seems to be fully disproved by the practical results with both tramway and railroad engines, even in their present development. In the former, engines developing 15 horse-power for 4½ hours, with a single charge of lye have 105 square feet of heating surface. The master mechanic of the Aachen-Jülich Railway has made affidavit that the Honigmann 45-ton engine on his road with 913 square feet heating surface has drawn 192 tons over his road, which has grades of 1 in 65 and curves of 813 feet radius, with entire satisfaction, while Henschel engines of the same weight with heating surfaces of 989 square feet draw only 180 tons. It will be seen that the soda engine has only its water and soda to pull as engine load, the weight of which is available for adhesion, while the other engine required a tender with the fuel, which probably accounts for the difference of pulling capacity. The same affidavit mentions a trip over the same road (33 miles) with a passenger train run on time with a load of soldiers amounting to 130 tons, driving which the charge of 1,315 gallons of soda lye evaporated and absorbed 1,710 gallons of water. The report does not state whether the return run had to be made with the same soda, but I believe this is the case, since there is only one condensation station on the line. This same engine has been for many months in the regular service of the road, and the fact of its being assigned in Germany to the duty of military transport is pretty good evidence of its reliability.

The water in these engines is fed in either with an injector

or a pump, precisely as in an ordinary engine. The danger of overheating plates or tubes is entirely removed. There is no possibility of a boiler explosion during operation, since the boiler pressure only increases as called for by the work given out, and cannot rise above a certain limit. There is no smoke, gas, or vapor of any sort emitted, and the soda, so far as it appears, is not in any way consumed, but lasts indefinitely; going through a continual round of dilution and concentration. With a proper disposition of materials, as indicated above, there is also no destruction of the boiler or tank by heat or chemical action, apart from the effects of interior scale. The formation of the latter and the effects of unequal expansion and contraction must also be very much diminished, as the difference of temperature between the water and the lye ranges only from 5° to 30°, instead of hundreds of degrees, as in the fuel-burning engine. Furthermore, this small difference of temperature is nearly constant over the whole extent of the heating surface, instead of ranging from nearly nothing at the smoke-box and to an enormous amount at the fire-box. This uniformity of heating must in itself be a source of economy in steam producing, through the consequent absence of foaming.

Mr. Honigmann is having two 45-ton machines built to run on the St. Gothard road on the grade of 1 in 40 between Erstfeld and Goschenen, at the northern end of the tunnel. They will prove particularly economical there, if successful in handling the heavy traffic, since the company has its air-compressing plant still in place, with which the water-power available can be applied to evaporating the diluted lye. If this proves a success, it opens a fine field for the application of a little dribble of Niagara to running the collective railroad divisions radiating from its vicinity.

The immediate and obvious utility of the invention is for all sorts of tramway, mine, underground and elevated railroads, where avoidance of noise and smoke are of the first importance. The difficulties of the London Underground Railway will vanish at once if, as I see no reason to doubt, the Honigmann engine is found capable of handling the traffic. It is also proposed to apply it to small steamers and torpedoes. For the latter it would be particularly profitable. It is also eminently applicable in all cases where the duty of the engines is over short periods, admitting of ready recharging of the soda, and where economy of first cost—small cylinders, etc.—is an object, since it will be evident that the use of expansion on these engines finds its chief utility in lengthening the period of duty; for the heat remaining in the steam is reabsorbed into the boiler, whether it be great or small.

Below I give the cost of plant and operation of the motive power of the Aachen street railroad:

Plant.	
4 locomotives at \$3,250	\$13,000
1 evaporating station	1,250
	\$14,250
Cost of Operation Per Day.	
1-365 of 10 per cent. of cost of plant for interest and wear	\$2.83
and tax	3.50
4 engine drivers at 87½¢	3.50
1 fireman at 75¢	.75
Oil and waste	.75
1 laborer	.63
4 x 675 lbs. = 2,700 lbs. coal at 0.00089	2.40
Repairs	1.13
	\$12.01

As three machines were kept at work, one being in reserve, the operation of each machine cost \$4, and as each ran daily not less than 60 miles, the cost per train mile was \$0.067. Part of these trains were of 2 cars each. In Germany the average car mile traction cost for horse roads using 1 and 2 horse cars is \$0.104.

An item in *Engineering* of Jan. 30 last states cost of dummy traction to be 3d., or about 6 cents per mile—about half the cost of horse traction in England. The same item states that Messrs. Merryweather's new engines for the London tramways show neither vapor nor steam, (the latter being condensed), but I think a vent is given for the gases at least, which would be pretty good evidence that such are emitted. The weight of the engine is not given, but fire-box, condenser and coal for the trip must certainly weigh more than Mr. Honigmann's soda tank with its charge, while it may be generally assumed that it would not be safe to burden the driver of a street dummy with the care of his fire in addition to other duties. It is also evident that certain items in the Aachen cost of operation would not increase in proportion to increased business, such as evaporating station and stoker for same, and reserve engine.

The relation of the cost of steam to horse traction would be much more favorable with us where labor is so much more expensive, particularly on roads where 2-car trains would be the normal mode of operating.

The ease of trying the soda condenser experiment is an important feature in its favor, as it requires only the special fitting up of an engine boiler and the patching up of any pair of old boilers for the evaporation.

For regular use the latter should be of copper, at least in the parts in contact with the lye. W. HOWARD WHITE.

Some Thoughts on Railroad Stations.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Many of the good things in your paper seem to be received and swallowed whole in the same way that most careless mortals receive all their blessings—without a word of thanks. We are so accustomed to receiving a satisfying installment of good things in your columns each week that we take it as a matter of course, same as selfish, untrained children do their parents' unnumbered benefactions, and take it for granted that you know we appreciate what you give us.

This line of thought is suggested by the admirable series of articles by Mr. Charles Paine which you published a few

months ago. Little or nothing has been said about them, and yet I know they must have been widely read and valued, for they are not only specimens of masterly arrangement and statement of facts that we already know (but don't know well enough), but also embody numerous original notions which approve themselves to every one's common sense, while at the same time they carry weight by their clear and simple statement as well as by reason of the name attached to them.

Every station-agent who reads Mr. Paine's observations about station buildings at once sees that they came from a person who has a heart as well as a head, which unfortunately seems to be only partially true of many railroad officers who order, and architects who build, station buildings for human beings to work (and live) in. To this last-named class—those who have to spend many hours daily or nightly in ticket and telegraph offices—this subject is a vital one, and it could be wished that Mr. Paine had spoken more emphatically and at length, so as to draw more general attention to it. In default of this, a few points in the line of his text, which are born of experience, may not be unprofitable, and I beg to offer a few thoughts on station houses considered as offices to do business in instead of merely as waiting rooms. These thoughts are chiefly expressed in the accompanying rough sketches, which are calculated to aid the memory and can speak more intelligently than I can through the types. The doors, windows and other details are omitted as they are not necessary to the present purpose.

There are, unfortunately, numerous instances on nearly every road in the country where Mr. Paine's strictures are applicable and needed, so that I offer no apology for enlarging upon the subject. The custom of building stations solely with a view to the accommodation of patrons, and without regard to the convenience of workers in them, is so universal that any other plan is hardly thought of. Not only are the work-rooms made so small as to preclude all possibility of decent ventilation, but the supply of light and even heat is often left entirely to chance. The reasons for the extensive prevalence of the present fashion may be briefly stated. In the first place, buildings must be long and narrow; for no other reason, apparently, than that they must stand as largely as possible on the regular right of way, so as not to necessitate the purchase of additional land. The office must be small, frequently for no other reason than to preserve a semblance of symmetry in the general plan of the waiting-rooms; and for small water-closets and baggage-rooms no better excuse is offered than general penuriousness, the limit of extravagance having been passed before these are reached, and the unexpressed thought that they are necessary nuisances at best. With the ordinary method of ventilation (or non-ventilation) it is impossible to preserve decent atmosphere in a much-used water-closet unless the room is large. One, two or more men breathe just as fast and need just as many cubic feet of air per hour when they are working at a small station as when they are at a large one.

In the plans herewith given the toilet-rooms are much larger than is customary, but they are by no means recommended as the maximum in size. By the term toilet-room is meant, of course, the one room which is generally used for dressing-room, wash-room, water-closets and urinals.

Fig. 1 presents the prevailing idea of a passenger station of what we may call the second grade—say for towns of 5,000 to 20,000 inhabitants; large cities being denominated first grade and the smaller villages third. The office could be made larger but it would make an unsightly projection in one of the larger rooms. The toilet-rooms are small for the same reason, and because a projection outward of the main walls would cost too much, or would extend beyond the company's line.

Where the building must be long and narrow, fig. 3 offers a very simple expedient by which plenty of office room, and at the same time an ample supply of daylight for the ticket-seller can be had. The semi-triangular form of ticket-office ought always to be retained, if possible, as it is unreasonable to ask the seller to spend half his time walking between two distant windows, and unpleasant for all classes of passengers to huddle around a single one. There are always likely to be partially intoxicated, dirty and otherwise offensive passengers whom it is not expedient to arrest or drive away, and ladies and children should not be compelled to be jostled by them. An aged tramp may frequently pollute the air around the men's window during the time a dozen women are buying tickets at the other, and oftener than otherwise these episodes occur when time is short and every one is in a hurry. Two windows in a line with each other, as in fig. 4, are less desirable than the triangular plan, because with the latter it is generally easier to arrange to have a partition separate the people at the different windows.

In using plan fig. 3 it is necessary to have the two water-closets in opposite ends of the building, which is sometimes, as at very small stations, a disadvantage, and possibly a source of unwarrantable additional cost; but the arrangement shown in fig. 2 obviates this and at the same time gives ample room. The length of the toilet-room, as well as the ticket-office (in fig. 2), those rooms being at right angles to the track, is limited only by the amount of land available, and it would seem as though, even at additional expense for ground, it ought to be regarded as some slight advantage in building a house of this shape, to be able to avoid the tedious monotony of oblong station houses which oppress the traveler everywhere.

Where uniformity in the stations of a road or division is desired fig. 2 is very simple, as different sized buildings need little change but in the width of the waiting-rooms. Fig. 2 as here shown has about the same amount of floor space as fig. 1. A long office with one end near the centre of a square

building complicates the question of light somewhat, but it is not an insurmountable difficulty by any means. The office can be made high enough to admit of a window above the awning which generally shades it on the trackward side; or a section of the latter can be made of glass; or, further, the building can be made two-story and light admitted through the upper rooms. The squat appearance of one-story station houses is their universal defect, and it would seem as though more two-story buildings ought to be put up just for variety, even if the loft were rented for a granary or a doctor's office. Architects might then get out of the useless and expensive fashion of running the awning or platform roof entirely around the building. It is questionable whether a properly-covered platform can be attached to a building so as to make a combination that shall be pleasing to the eye; and it were perhaps well to give up the attempt, and make honest plans acknowledging that the awning and the building were not expected to be spliced together as one (apparently) continuous structure.

The references as below are the same in all the diagrams, as follows:

- M W, Main waiting-room.
- L W, Ladies' " "
- G W, Gentlemen's " "
- L T, Ladies' toilet " "
- G T, Gentlemen's " "
- T, Ticket office.
- t, Telegraph office.
- B, Baggage-room.
- S, Smoking-room.
- A, Agent's office.
- P, Passage-way.

The projection shown in each plan, by which the occupant of the ticket-office is enabled to have windows to see up and down the line, indicate which side of the building is intended to face the track. There are, strange to say, so-called railroad architects, even now, who erect station-houses without this simple convenience.

STATION AGENT.

Waddell's "Highway Bridges"—Correction.

TOKIO, Japan, May 19, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the review of my treatise on "The Designing of Ordinary Iron Highway Bridges," published in your issue of April 10, there is a slight mistake made, viz., the assertion that the book contains no list of tables. If you will look again, you will find one immediately after the "Contents."

In respect to the difficulty in finding any particular table, I regret that the tables were not so marked that the numbers might readily catch the eye. I will have this matter attended to as soon as possible, although I fear it is now too late for the second edition, which the publishers wrote me some time ago would be soon needed.

If the owners of the first edition will each spend five minutes in numbering the tables on the upper right-hand corners as folded, the objection raised will vanish.

As to the reliability of the tables which you speak of, although you do not question it, I would state that, with the exception of Nos. XXIX. to XXXIII., XXXVIII. and XL., they were all either computed by two persons, or checked by the method of continued differences, or both. Table XXIX. was, as stated in the text, prepared from a diagram, and is to be used for estimates only. The other exceptions mentioned are not susceptible of either computation or checking, being empirical.

Some of the tables were prepared either wholly or in part for Messrs. Raymond & Campbell, but most of them were computed especially for the treatise.

The correctness of the weights of iron in Tables I., II. and III. has lately received additional proof, six of my students having each designed according to the method of the treatise a highway bridge as a thesis, with a resulting maximum error in the weight of iron per lineal foot of less than one-half of 1 per cent. As the examples chosen were of different spans and classes of bridge, the results are very satisfactory.

Thanking you for your otherwise favorable review, and for the suggestion about numbering the tables, I remain, etc.,

J. A. L. WADDELL.

Car Accountants' Association.

The tenth annual convention of the Car Accountants' Association met at the West Hotel in Minneapolis, June 23. A large number of members were present, the Convention being the fullest yet held by the Association. After roll call the Treasurer reported that the expenditures for the year had been \$571 and the receipts \$565, leaving a deficiency of \$6.

The election of officers being next in order, the following were chosen:

President—Frank M. Luce, Chicago & Northwestern.
Vice-President—A. P. Wilder, Atchison, Topeka & Santa Fe.

Secretary—D. F. Maroney, Baltimore & Ohio.

Treasurer—E. M. Horton, Illinois Central.

Reports of committees being then in order Mr. D. F. Maroney, chairman of the committee appointed to wait upon the Master Car-Builders' Association, reported that they had acted in accordance with instructions and had submitted a plan for the marking of fast-freight cars, which plan the Car-Builders' Association adopted. The proposition to mark cars not in the service of fast-freight lines was rejected.

Asa P. Blakslee, from the committee appointed to confer with the managers of fast-freight lines, reported that the managers refused to take charge of the mileage of the cars on their respective lines in order that they might determine as to the earnings of each separate line. It was deemed advisable to continue the committee another year, and, at the request of Mr. Blakslee, C. F. Rand was appointed in his stead on the committee.

Action was then taken on a number of invitations received by the Convention. Returning to business, the meeting listened to a report by M. C. Trout, of the committee

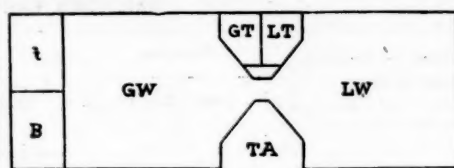


Fig. 1.

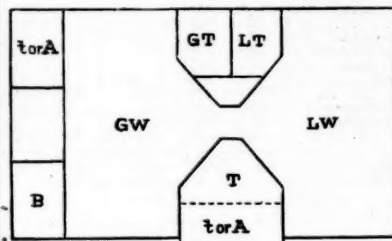


Fig. 2.

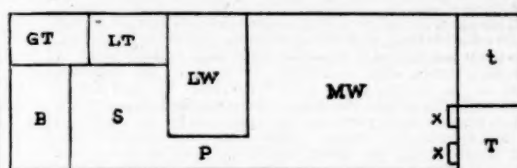


Fig. 4.

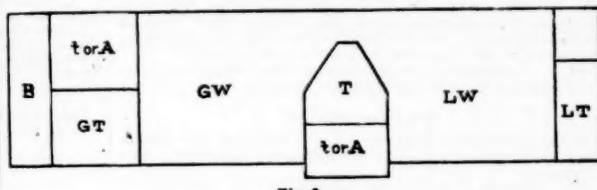


Fig. 3.

designated to wait upon general traffic managers, with a view of securing a uniform rate of mileage for passenger equipment, who reported that uniformity in this matter was general, and that the only road not paying the uniform rate of three-fourths of a cent was the Norfolk & Western. J. A. Keesberry, of the committee to confer with the managers of the New England railroads in relation to the movement of cars over roads of that section, and also in relation to the methods employed in the New England clearing house, rendered an elaborate report, in the course of which he recited the decided advantages arising from the prevalence of the New England system, and recommending that an effort be made to induce the New England roads to join the Association. With direct bearing upon this same subject, E. B. Hill, of the New England Clearing House Association, spoke upon the clearing house troubles which are experienced between New England roads and roads of other sections.

APPOINTMENT OF COMMITTEES.

President Luce announced the following committees: Publications, J. A. Keesberry, A. J. Speese, Asa P. Blakslee, D. F. Maroney.

On Subjects for Discussion, H. N. Eastman, C. F. Drew, C. P. Chesbro, H. H. Lyon, J. H. Masten.

Location and Time of Meeting, W. A. Moody, F. J. Hoyle, E. L. Hill.

Constitution and By-Laws, C. F. Rand, J. F. Cochrane, R. Toombs, D. L. Mahoney, O. Drezmal.

The Convention then adjourned until 3 o'clock.

At the afternoon session W. A. Spaulding, of the committee on record of switch cars, asked for further time, and the Convention accordingly granted the committee another year in which to investigate and make a report.

H. G. Sleight reported on the best means of carding cars, and recommended the adoption of the carding rack invented by C. W. Cushman, of Buffalo. J. N. Burnham also submitted a carding rack.

The discussion on this subject was prolonged, and the question was handled by Messrs. J. E. Wardley, C. P. Chesbro, C. W. Cushman, E. G. Squire, M. Sweeney, A. W. Davis, H. G. Sleight and others.

The question was laid over for another year without definite action. Some of the delegates insisted that the rack recommended by the committee was the most simple yet devised, while others contended that a more simple and economical system might be introduced.

The carding rack, which had a position on the side of freight cars, is employed, or rather proposed to be employed, in order to secure a proper movement and loading of cars.

The committee on plan for numbering the railroads of the United States and Canada submitted a report, in which they recommended that the country be divided into 10 districts, assigning to the roads of each of these districts 100 numbers.

It was argued that the adoption of this system would save a great deal of labor, and be the means of preventing errors in car service account. After considerable discussion the subject was continued until the next session.

The Convention then adjourned until the next day. After the adjournment a social meeting was held, which passed off very pleasantly, and a number of members were driven in carriages to points of interest in the city and vicinity.

Mr. W. A. Moody, the retiring President, was in the evening presented with a valuable gold watch and chain and a handsome gold-headed cane by his friends in the Association.

SECOND DAY.

At the second day's session reports were submitted by the Committee on Per Diem Charge for Cars, the Committee on Distribution of Cars, and the Committee to Examine Sechrist's Hand-Book.

All these reports were followed by considerable discussion, as were also the reports of the Committees on Division of Cars, on the Return of Foreign Cars and the question of holding foreign cars for loads, and on Traveling Car Agents.

Reports were also presented by the General Committee on Efficiency of Car Service and on a General Clearing House.

While the Convention was in session the ladies, a number of whom were present, were taken on an excursion to White Bear Lake.

CLOSING.

The third day, the business of the Convention having been substantially disposed of, was devoted to short excursions in the neighborhood of Minneapolis and St. Paul, and the evening to a reception tendered by the citizens, and on the fourth day the meeting closed with an excursion to Lake Minnetonka and a banquet there, after which most of the members started on their journey homeward.

Uniform Train Orders and Rules.

At the recent convention of the Train Dispatchers' Association, the Committee on Uniform Train Orders, Rules and Signals submitted a report, which, after a few changes, was adopted so as to recommend as follows:

1. The use of double orders when practicable.

2. That no abbreviations be used in body of an order and numerals shall be written in full and duplicated with figures. That figures "12" be for "How do you understand?" and figures "13" for "We understand."

3. That the conductor only be required to sign train orders, and that he be required to deliver the same to the engineer before the train is started out of the station.

4. That all trains be required to get a clearance card or order before leaving terminal points.

5. We were unable to agree on the necessary classes of trains.

6. We favor indefinite rights one way.

7. We recommend 5 minutes as the time a ruling train should wait at meeting point for trains of the same class.

8. We favor trains losing their rights after coming 12 hours late.

9. We recommend the use of time orders.

10. In cases of emergency we favor running trains against a "hold order" signed by the agent or operator.

11. That work trains be given as short a limit as possible consistent with the work to be done, and should have notice of all other irregular trains within those limits, and should flag against them after a specified time.

12. That the following sections have the identical rights as leading section as per time table.

13. In cases of conductors and engineers changing off on the road, the new men should acknowledge the receipt of all orders then in force governing their train, and should repeat their understanding to the dispatcher.

14. (Stricken out.)

15. Should a regular train from any cause fail to reach its destination by the time a new table goes into effect, it loses all its right and cannot proceed without special orders from the train dispatcher. It must be understood that trains on new time table do not run unless starting from their terminal point after the table is in effect.

16. That copies of train orders, and explanations of the same, be printed on the time cards.

17. That all conductors and engineers be required to pass an examination on time cards and rules regarding the movements of trains, and that such examination be conducted by the superintendent, train master or chief train dispatcher.

18. That we recommend a stationary train-order signal, red and white, both day and night, and that the normal position of such signal be white and moved to red when desired to hold trains.

19. That all orders shall be numbered consecutively daily, commencing at midnight.

In addition to the foregoing we would respectfully submit the following rules and forms of orders:

Rule A. 1.—All train orders should be issued over the name or initials of the chief train dispatcher.

Rule A. 2.—Manifold paper to be used for all train orders. An order for a definite meeting point:

Form A.—No. — and No. — will meet at —.

An order to move an inferior train against or ahead of a delayed superior train:

Form B.—No. — will run — late from — to —.

A time order of the following form:

Form C.—No. — can have until — to run to — against No. —.

A hold order:

Form D.—To operator: Hold No. — for orders.

A signal order:

Form E.—To C. and E.: Run as first, second and third sections of No. —. First and second sections will carry — signals.

An order to move an irregular train:

Form F.—To C. and E.: Run wild from — to —.

Work-train order:

Form G.—To C. and E.: Work wild between — and — until — m. Date.

Changing meeting points:

Form H.—No. — and No. — will meet at — instead of —.

Countermanding orders:

Form I.—Order, No. — is void.

Explanations of the meaning of each of the foregoing forms are attached, as follows:

Form A.—Upon an order of this form the train arriving first at the station named will wait until the other train arrives, unless they receive another order authorizing them to proceed.

Form B.—Upon receiving an order of this form the superior train will run 5 miles more behind schedule time than the time specified in the order. Inferior class trains receiving this order can get the time of the superior class train, as specified between the points named in the order ahead of or against a superior class train.

Form C.—Upon this order the first-named train has the right to run to the station designated up to the time given in the order, but not ahead of schedule time. In case the first-named train should fail to reach the station named in the time allowed, it will run as per schedule. In such a case the train last named in the order will not leave the station designated until 5 minutes after the time specified in the order.

Form D.—The operator receiving this order will show the same to conductor and engineer of the train ordered held, who will wait indefinitely for orders. The operator must not give his "13" to such an order until he has displayed proper signal and is assured beyond a doubt that he can hold the train as directed in the order.

Form E.—The train receiving this order shall display two flags by day and two lights by night on front of engine and proceed to station designated as the section of the train given in the order.

Form F.—Upon receipt of this order the train will run to the station named in the order, keeping entirely out of the way of regular trains.

Form G.—Upon this order work trains will have a right to use the track between the points specified, keeping out of the way of regular trains.

Additional instances.—No. 3 will run from Denver to Pueblo

regardless of No. 10. Explanation: Upon this order the train first named will run upon or as near as possible, but not ahead of, its schedule time, until the station named therein is reached. The train last named in the order must keep entirely clear of the main track after 5 minutes previous to the schedule time of the former train until it arrives. The last named train will always take the siding when practicable, and when not so must be fully protected by a flagman in the direction of the approaching train. Train dispatcher must give the last named train the order before arriving at the station named therein.

All orders shall be numbered consecutively for each day, commencing with No. 1 at midnight.

TECHNICAL.

Locomotive Building.

The Baldwin Locomotive Works, in Philadelphia, last week delivered 2 switching engines to the Buffalo, New York & Philadelphia road, and a freight engine; with 19 by 24 in. cylinders, to the Cape Fear & Yadkin Valley road.

H. K. Porter & Co., in Pittsburgh, are busily employed on a number of orders for light locomotives.

The Car Shops.

The United States Rolling Stock Co. is building 500 freight cars for an Eastern road in its shops at Hegewisch, near Chicago.

The Laconia Car Co., at Laconia, N. H., has several orders for passenger cars to be filled.

Bridge Notes.

The Keystone Bridge Co., in Pittsburgh, has contracts for several iron bridges on the extension of the Schuylkill Division of the Pennsylvania Railroad.

The Phoenix Bridge Co., at Phoenixville, Pa., has taken contracts for several new bridges on the Pennsylvania Railroad extension from Reading to Pottsville.

Cofrade & Saylor, of the Philadelphia Bridge Works, at Pottstown, Pa., have a contract for several iron bridges on the Pennsylvania Schuylkill Valley road.

Iron and Steel.

The Joliet Steel Co. will start up its rolling mills at Joliet, Ill., July 6, and expects to run with a full force.

The charcoal blast furnace at Elk Rapids, Mich., which went out of blast last April, has been repaired and has started up again.

The Spang Iron & Steel Works in Pittsburgh last week rolled a pair of steel boilers 102 in. in diameter and $\frac{1}{2}$ in. thick. These are not the largest made in this mill, as a pair 108 in. in diameter were recently rolled and sent to San Francisco.

Manufacturing and Business.

The Central Iron Works in St. Louis are building several turn-tables for the Kansas City & Southern road.

The well-known firm of George T. Cochower & Co., dealers in railroad supplies, has removed its office from No. 10 to No. 8 Oliver street, Boston, the new office being next door to the old one.

The Rail Market.

Steel Rails.—The market continues quiet, with none except small orders reported. Quotations continue at \$27@28 per ton at mill for ordinary sections, and \$29@31 for light rails. The mills are pretty fully employed at present, and are not disposed to make concessions for ordinary contracts. Some large orders, it is said, will be on the market shortly, for which there will probably be some sharp competition.

Rail Fastenings.—The market continues very dull, with quotations nominally unchanged at 1.80@1.90c. per lb. for spikes in Pittsburgh, 2.40@2.80c. for track-bolts and 1.60@1.70c. for splice-bars.

Old Rails.—Old iron rails are more active and there is an upward tendency in the market, quotations ranging from \$17@18 per ton at tidewater. Old steel rails are quoted at \$16@17 per ton in Pittsburgh, with light demand.

Brake Tests.

The American Brake Co., of St. Louis, has equipped a train consisting of a locomotive, 3 box cars, 12 gondolas and a caboose car with its brakes, and proposes to send this train on a trip eastward in order to exhibit the advantages of the brake to various roads. Some very interesting tests were recently made with this train on the Carondelet branch of the Missouri Pacific, in which a number of stops were very successfully made. Comparisons were made between the fully equipped brake in use, the steam driver and tender brake only, and the hand brakes.

Engineers' Society of Western Pennsylvania.

The regular monthly meeting was held in Pittsburgh, June 23. Mr. Joseph D. Weeks was expected to read a paper on the Coke Industry, but was necessarily absent attending a meeting of the Iron Association. Mr. R. R. Bridges, Jr., read a paper on the Main Points of a Good Railroad. He divided his subject into four parts, drainage, ballast, wear on rails, and splices, the last being illustrated by a diagram. After the reading a general discussion took place, several of the members expressing their ideas on the subject.

A request from the Patent Library of London asking that the transactions of the society be sent them, was granted. John R. Wightman, Allegheny, Horace E. Grant, Pittsburgh, and J. W. Kelley, New Brighton, were elected to membership. The society adjourned for its summer vacation, and will not meet again until September.

Engineers' Club of Philadelphia.

A special business meeting was held in Philadelphia, June 20. Past President Lewis M. Haupt in the chair; 23 members present.

The revision of the by-laws of the Club, as reported by the Committee having that work in charge and amended at the special business meeting on June 6, was adopted by unanimous vote.

The tellers reported the following candidates elected members of the Club: Active Members, Edward Longstretch, C. A. Sundstrom, H. N. Sims, F. L. Garrison, Herbert C. Felton, Geo. W. Hewitt, W. K. Martin, A. G. Mitchell, Wm. T. Forsythe, Chas. E. Taylor, Geo. S. Cheyney, Jr., Edward H. Johnston, Charles Wyeth, Rudolph Baizley and E. L. Corthell. Associate Members, Messrs. Wm. S. Moorhead, W. C. Strawbridge, J. Bonsall Taylor, and Justus H. Schwacke.

The Secretary presented, from Prof. J. A. L. Waddell, a communication proposing that the Club organize a system of Review of Engineering Literature, and suggesting methods therefor.

The Secretary presented, from Mr. James Beatty, Jr., a paper upon the Relative Costs of Fluid and Solid Fuels. Prof. L. M. Haupt announced, by title, a paper upon the Repairs to the Conduit of the Philadelphia Traction Co., which will probably be ready for publication during the summer.

The Secretary presented, from Mr. C. W. Buchholz, a Memorial of the late William Lorenz, reviewing his studies,

RAILROAD EARNINGS IN MAY.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Baltimore & Potomac.....	92	92				108,698	108,289		2,191	2.0	1,153	1,177		24	2.0
Boston, Hoosac Tun. & West.	87	87				35,671	31,613	4,058			12.5	410	363	47	12.5
Danbury & Norwalk.....	37	37				15,982	14,209	1,773			12.6	432	384	48	12.6
Grand Trunk.....	2,918	2,918				1,094,198	1,227,003		132,805	10.8	375	420		45	10.8
Long Island.....	354	354				218,273	218,302		29		617	617			
N. Y. & New England.....	400	400				300,305	273,702		13,977	4.9	651	684		33	4.9
N. Y. Ontario & Western.....	373	373				140,045	163,126		14,081	8.6	400	437		37	8.6
N. Y. Sus. & Western.....	147	147				85,294	86,78		1,487	1.8	589	590		1	1.8
Northern Central.....	322	322				454,917	477,848		22,931	4.8	1,413	1,484		71	4.8
Pennsylvania.....	2,270	2,125	145		6.9	3,890,469	4,267,173		376,704	8.8	1,714	2,008		294	14.7
Philadelphia & Reading.....	1,560	1,560				2,377,423	2,827,941		450,518	16.0	1,524	1,813		289	16.0
Rochester & Pittsburgh.....	294	294				99,234	84,756	14,478		17.1	377	288	49		17.1
West Jersey.....	201	188	13		6.9	96,068	102,969		6,901	6.7	478	548		71	12.8
Total, 13 roads.....	9,055	8,897	158		1.7	8,882,977	9,883,712	10,369	1,021,044	10.1	981	1,111		130	11.7
Total inc. or dec.....			158		1.7				1,021,044	10.1				130	11.7

SOUTHERN ROADS.

Alabama Great Southern.....	290	290				68,224	88,543		20,319	29.8	295	305		70	22.8
Cin., N. O. & Tex. Pacific.....	336	336				187,246	219,147		31,901	14.5	557	652		95	14.5
East Tennessee, Va. & Ga.....	1,098	1,098				276,334	295,460		19,126	6.5	252	269		17	6.5
Florida Ry. & Nav. Co.....	528	500	28		5.6	68,955	85,316		16,361	19.2	131	171		40	23.5
Ill. Cen. Southern Div.....	711	678	133		23.0	309,419	284,056	25,363		6.9	435	491		56	11.4
Louisville & Nash.....	2,015	2,065		50	2.4	1,094,085	1,156,109		62,024	5.4	543	569		26	3.0
Mobile & Ohio.....	528	528				125,119	142,774		17,655	12.3	237	270		33	12.3
Nashville, Chattanooga & St. L.....	574	554	20		3.6	167,495	180,751		23,256	12.2	292	344		52	15.1
N. Orleans & Northeastern.....	195	195				49,900	28,475	21,425		76.0	256	146	110		76.0
Norfolk & Western.....	512	503	9		1.8	192,827	262,436		6,909	4.8	375	402		27	6.6
Rich. & Danville.....	757	757				292,077	299,329		7,252	2.4	386	395		9	2.4
Char., Col. & Augusta.....	370	356	14		3.9	46,286	48,241		1,955	4.1	125	136		11	8.0
Col. & Greenville.....	296	296				36,617	36,637		1,020	2.8	120	123		3	2.8
Georgia Pacific.....	318	288	30		10.4	46,113	47,014		901	1.9	145	163		18	11.2
Virginia Midland.....	352	352				124,027	137,303		13,336	9.7	352	390		38	9.7
Western N. Carolina.....	274	208	66		31.8	38,437	32,124	4,313		16.4	135	154		21	13.9
Vicksburg & Meridian.....	142	142				25,900	30,831		4,931	16.0	182	217		35	16.0
Total, 17 roads.....	9,296	9,046	300	50	2.7	3,145,861	3,324,406	51,101	229,646	6.9	338	367		29	8.0
Total inc. or dec.....			250		2.7				178,545	6.9				26	7.9

CENTRAL GROUP.

Chi. & Eastern Illinois.....	252	252				126,339	112,309	14,030		12.5	501	446	55		12.5
Chi. & West Michigan.....	410	410				105,420	139,369		33,949	24.3	257	340		83	24.3
Cin., Ind., St. L. & Chicago.....	342	342				191,475	205,195		13,720	6.7	560	600		40	6.7
Cin., Wash. & Baltimore.....	284	284				118,390	143,809		25,419	17.7	417	506		89	17.7
Cleve., Akron & Columbus.....	144	144				40,494	40,255	239		0.6	281	279	2		0.6
Detroit, Lansing & No.....	258	258				98,831	132,993		34,162	25.7	383	515		132	25.7
Evansville & Terre Haute.....	146	146				59,470	60,018		548	0.9	407	411		4	0.9
Flint & Pere Marquette.....	392	392				173,000	223,298		50,298	22.6	478	617		139	22.6
Illinois Central, Ill. lines.....	953	953				507,585	504,753	2,832		0.5	533	550	3		0.5
Ind., Bloom. & West.....	532	532				160,606	173,085		12,479	7.2	302	325		23	7.2
N. Y., Chicago & St. L.....	523	523				232,349	221,769	10,580		4.8	444	424	20		4.8
Ohio & Mississippi.....	615	615				275,480	312,756		37,276	11.9	448	508		60	11.9
Ohio Southern.....	130	130				31,845	28,988	2,857		9.9	245	223	22		9.9
Peoria, Decatur & Ev.....	254	254				49,699	59,188		9,519	15.9	196	233		37	15.9
St. L., Alton & Terre Haute.....	195	195				84,395	104,847		20,452	19.5	433	538		105	19.5
Main Line.....	138	138				45,548	55,416		9,868	17.9	330	402		72	17.9
Belleville Line.....	61	61				18,838	19,630		792	4.0	309	352		43	4.0
Tol., Ann Arbor & N. Mich.....	3,219	3,219				1,069,075	1,202,032		132,957	11.1	332	397		65	11.1
Wabash, St. L. & Pacific.....	3,219	3,219				1,069,075	1,202,032		132,957	11.1	332	397		65	11.1
Total, 18 roads.....	8,818	9,160		342	3.7	3,388,809	3,739,710	30,538	381,439	9.4	384	408		24	5.8
Total inc. or dec.....				342	3.7				350,901	9.4				24	5.8

NORTHWESTERN ROADS.

Bur., Cedar Rap. & No.	900	714	276	39.0	239,385	221,573	17,812	8.0	242	310	68	22.0	
Central Iowa.	500	500			88,562	117,840		29,278	24.8	177	236	59	24.8
Chi. & Alton.	850	850			588,552	652,661		64,109	9.8	692	768	76	9.8
Chi., Mil. & St. Paul.	4,804	4,790	44	0.9	1,875,000	1,985,768		110,768	5.6	390	417	27	6.7
Chi. & Northwestern.	3,900	3,800	100	2.6	1,977,400	2,076,829		99,029	4.3	507	547	40	7.2
Chi., St. P., Minn. & Omaha	1,320	1,300	20	1.5	475,600	513,349		37,749	7.3	360	395	35	8.8
Des Moines & Ft. Dodge	138	138			27,791	24,916	2,875		11.5	201	181	20	11.5
Ill. Central, Iowa lines	402	402			124,800	134,352		9,552	7.1	310	334	24	7.1
Marquette, H. & Ont.	138	138			75,900	111,618		35,718	31.9	550	809	259	31.9
Mil., Lake Shore & West.	478	372	106	28.6	95,980	95,634	346		0.4	91	257	56	21.6
Mil. & Northern.	297	227			46,775	45,438	1,337		2.9	206	200	6	3.0
Wisconsin Central.	440	440			97,285	99,394		2,109	2.1	221	226	5	2.1
Total, 12 roads.	14,187	13,641	546		5,713,430	6,079,372	22,370	388,312		403	446	43	
Total inc. or dec.			546	4.0				305,942	6.0				9.7

RAILROAD EARNINGS, FIVE MONTHS ENDING MAY 31.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Balt. & Potomac	92	92				\$ 551,585	\$ 475,890	\$ 75,695			15.9	\$ 5,995	\$ 5,173	\$ 822	15.9
Bos. & N. Y. & W.	87	87				171,583	158,717	12,866			8.1	1,972	1,825	147	8.1
Dan. & Norwalk	37	37				98,305	70,139	28,166			8.5	2,662	1,901	761	8.5
Grand Trunk	2,918	2,918				6,024,277	6,723,552	699,275			10.4	2,065	2,304	239	10.4
Long Island	354	354				885,182	845,800	39,382			4.6	2,501	2,380	121	4.6
N. Y. & New Eng.	400	400				1,242,857	1,304,329	61,472			4.7	3,107	3,261	154	4.7
N. Y., Ontario & W.	373	373				687,215	677,611	9,604			1.5	1,789	1,817	28	1.5
N. Y., Susq. & W.	147	147				405,893	368,858	36,935			10.0	2,761	2,510	251	10.0
Northern Central	322	322				2,181,552	2,203,620	22,068			1.0	6,775	6,844	69	1.0
Pennsylvania	2,308	2,107	161		7.7	17,583,959	16,427,080	1,156,879			9.3	7,753	7,220	533	7.3
Phila. & Reading	1,560	1,560				10,281,909	12,060,900	1,778,991			14.8	6,591	7,737	1,146	14.8
Rochester & Pitts.	294	294				440,571	387,528	53,043			13.6	1,499	1,318	181	13.6
West Jersey	201	188	13		6.9	399,745	415,134	15,389			3.7	1,989	2,208	219	9.9
Total, 13 roads.	9,053	8,879	174			40,912,633	45,128,464	233,881	4,439,712		9.3	4,519	5,083	564	
Total inc. or dec.			174		1.9				4,215,831					564	11.1

SOUTHERN ROADS.															
Ala. Gt. Southern	290	290				\$ 451,599	\$ 417,595	\$ 34,004			0.9	\$ 1,557	\$ 1,438	\$ 119	0.9
Cin., N. O. & Tex. P.	336	336				1,001,292	1,004,135	2,843			0.3	2,980	2,989	9	0.3
East Tenn., Va. & Ga.	1,098	1,098				1,476,652	1,556,468	79,816			5.1	1,345	1,418	73	5.1
Fla. Ry. & Nav. Co.	528	481	47		9.8	428,614	444,800	16,186			3.6	812	925	113	12.4
Ill. Cent. So. Div.	711	578	133		23.0	1,889,520	1,657,006	232,514			14.0	2,657	2,867	210	7.3
Louisville & Nash.	2,055	2,065	10		0.4	5,788,357	5,523,896	264,471			4.8	2,817	2,675	142	5.3
Mobile & Ohio	528	528				810,678	836,350	25,672			3.1	1,535	1,584	49	3.1
Nash., Chat. & St. L.	374	354	20		5.3	870,518	886,224	15,706			10.6	1,532	1,775	243	15.6
N. O. & Nor'east.	195	195				291,595	161,679	129,916			80.2	1,495	829	666	86.2
Norfolk & Western	512	503	9		1.8	1,045,283	1,092,634	47,351			1.7	2,042	2,113	71	3.4
Rich. & Danville	757	757				1,589,279	1,573,283	15,996			1.0	2,069	2,078	9	1.0
Char., Col. & Aug.	370	356	14		3.9	336,279	319,598	16,681			5.2	909	898	11	1.2
Col. & Greenville	296	296				286,814	270,706	16,108			5.9	969	915	54	5.9
Ga. Pacific	318	288	30		10.4	266,212	220,001	46,211			21.0	837	765	72	9.4
Va. Midland	352	352				573,165	604,272	31,107			5.2	1,628	1,717	89	5.2
Western N. C.	274	206	68		31.8	180,339	161,307	19,032			11.8	658	775	117	15.1
Vicks. & Meridian	142	142				173,930	194,413	20,483			11.1	1,218	1,309	91	11.1
Total, 17 roads.	9,336	9,027	319		3.4	17,468,005	17,021,355	446,650	298,185		2.6	1,871	1,886	15	0.8
Total inc. or dec.			309						446,650					15	0.8

CENTRAL GROUP.															
Chi. & Eastern Ill.	252	252				\$ 626,554	\$ 564,796	\$ 61,758			10.9	\$ 2,486	\$ 2,241	\$ 245	10.9
Chi. & West Mich.	410	410				478,205	637,173	158,968			24.9	1,166	1,554	388	24.9
Cin., Ind. St. L. & Chi.	342	342				969,648	897,171	72,477			8.1	2,835	2,623	212	8.1
Cin., Wash. & Balt.	284	284				727,887	724,289	3,598			0.5	2,563	2,550	13	0.5
Cleve., Akron & Col.	144	144				183,957	182,520	1,437			0.8	1,278	1,268	10	0.8
Det., Lan. & No.	258	258				445,189	569,400	124,211			21.8	1,725	2,207	482	21.8
Ev. & Terre Haute	140	140				281,872	282,008	136			1.9	1,931	1,832	99	5.4
Flint & Pere Marq.	362	362				772,984	1,036,068	263,114			25.4	2,135	2,862	727	25.4
Ill. Central lines.	953	953				2,482,092	2,399,514	82,578			3.4	2,604	2,518	86	3.4
Ind., Bloom. & W.	523	523				923,436	903,604	19,832			2.2	1,736	1,699	37	2.2
N. Y., Chi. & St. L.	523	523				1,307,254	1,277,655	29,599			2.3	2,500	2,443	57	2.3
Ohio & Mississippi	615	615				1,474,214	1,538,772	64,558			4.2	2,295	2,502	207	4.2
Ohio Southern	130	130				174,899	178,480	3,581			2.0	1,345	1,373	28	2.0
Peoria, Dec. & Ev.	254	254				377,283	313,429	63,854			11.5	1,092	1,234	142	11.5
St. L., Alton & T. H.	195	195				469,318	581,488	112,170			19.3	2,407	2,982	575	19.3
Main Line	138	138				297,968	333,479	35,511			10.7	2,159	2,417	258	10.7
Belleville Line	61	61				104,601	84,491	20,110			23.8	1,715	1,385	330	23.8
Tol., Ann A. & N. M.	3,483	3,630	147		4.0	5,956,624	6,274,536	317,912			5.1	1,710	1,729	19	1.1
Wab., St. L. & Pac.															
Total, 18 roads.	9,082	9,229	147		1.6	17,953,985	18,778,903	291,389	1,116,307		4.4	1,977	2,035	58	2.8
Total inc. or dec.			147						824,918					58	2.8

NORTHWESTERN ROADS.															
Bur., Ced. Rap. & No.	944	714	230		30.0	\$ 1,183,467	\$ 1,072,325	\$ 111,142			10.4	\$ 1,254	\$ 1,502	\$ 248	16.5
Central Iowa	500	500				480,418	572,240	91,822			18.1	991	1,144	153	16.1
Chi. & Alton	850	850				3,043,585	3,197,787	154,202			4.8	3,581	3,762	181	4.8
Chi., Mil. & St. P.	4,804	4,760	44		0.9	8,749,000	8,507,291	241,709			2.8	1,821	1,787	34	1.9
Chi., St. P. & N. W.	3,900	3,800	100		2.6	8,727,654	8,672,452	55,202			0.6	2,238	2,282	44	1.9
Chi., St. P., M. & O.	1,312	1,292	20		1.6	2,038,932	2,227,035	188,103			8.4	1,554	1,724	170	9.9
Des Moines & Ft. D.	138	138				141,959	132,294	9,665			7.3	1,029	958	71	7.3
Ill. Cent., Iowa lines	402	402				604,031	670,349	66,318			9.9	1,505	1,697	192	9.9
Marquette, H. & O.	138	110	28		25.5	160,220	169,627	39,397			19.7	1,161	1,815	654	36.2
Mil. L. & S. W.	478	375	103		27.5	449,248	444,956	4,292			0.9	940	1,187	247	20.7
Mil. & Northern	227	227				325,783	297,657	28,126			8.7	995	915	80	8.7
Wisconsin Central	440	440				566,879	582,601	15,722			2.7	1,288	1,324	36	2.7
Total, 12 roads.	14,133	13,608	525		3.8	26,371,186	26,486,584	440,166	555,564		0.4	1,866	1,946	80	4.1
Total inc. or dec.			525						569,909					80	4.1

ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	2,794	2,088	706		33.6	\$ 2,593,378	\$ 1,547,383	\$ 1,045,995			67.6	\$ 928	\$ 741	\$ 187	25.3
Northern Pacific	2,453	2,450	3		0.1	3,588,226	4,842,463	1,254,237			25.9	1,463	1,977	514	26.0
St. P. & Duluth	227	227				384,589	382,940	1,649			4.8	1,606	1,687	81	4.8
St. P., Minn. & Man.	1,397	1,351	46		3.4	2,029,470	2,972,786	343,316			11.6	1,882	2,200	318	14.5
Total, 4 roads.	6,871	6,116	755		12.4	9,175,663	9,745,572	1,045,995	1,615,904		5.9	1,335	1,503	258	16.2
Total inc. or dec.			755						569,909					258	16.2

SOUTHWESTERN ROADS.															
Ft. Worth & Den.	117	110	7	....	6.4	153,666	193,311	.....	20.5	.....	1,313	1,757	....	444	25.3
Gulf. Col. & S. F.	536	536	.....	.....	.....	459,320	644,971	.....	28.8	857	1,203	.....	346	.....	28.8
K. C., Ft. S. & Gulf.	389	389	.....	.....	.....	1,061,676	982,039	.....	10.4	2,729	2,473	256	.....	.....	10.4
Kan. C. Spr. & Mem.	282	282	.....	.....	.....	722,636	437,686	.....	69.0	2,563	1,518	1,045	.....	.....	69.0
St. L., Ft. S. & W.	189	189	29	.....	18.1	327,767	189,772	.....	19.9	1,205	1,186	19	.....	.....	19.9
St. L. & San Fran.	804	750	54	.....	7.2	1,680,544	1,759,909	.....	4.5	3,060	2,446	.....	256	.....	4.5
Texas & St. Louis	735	735	.....	.....	.....	369,285	71,191	.....	23.5	583	406	.....	97	.....	23.5
Vicks., Sh. & Pac.	170	101	69	.....	68.3	132,814	50,036	.....	165.5	781	495	286	.....	.....	57.3
Total 8 roads.....	3,222	3,063	159	4,807,714	4,526,018	1,492	1,478	14	0.8
Total inc. or dec.	150	5.1	281,696	6.2	14	0.8



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE CIVIL ENGINEERS' CONVENTION.

June is certainly the month of conventions. The Master Car-Builders' at Old Point Comfort, the Master Mechanics' at Washington, and the Civil Engineers' at Deer Park, Md., came along in successive weeks. Besides these there were simultaneous meetings of yardmasters at Philadelphia on the 10th, of train dispatchers at Denver on the 16th, and of car-accountants at Minneapolis on the 23d. The Western Association of General Passenger and Ticket Agents varied the monotony by meeting in May, and the General Baggage Agents by meeting in July; but June is by long odds the favored month for conventions.

Of them all, the Convention of the Society of Civil Engineers is the least distinctively for business. Yet its meetings have no little interest for railroad men as such, since it is as yet the only organized body in which questions affecting the construction and maintenance of railroads, and many general railroad questions of a technical character, find an appropriate field for discussion. Owing to the large number of its members who have abandoned the active practice of engineering to accept positions as managing officers of railroads, it has also in times past furnished the best, because almost the only body before which semi-technical questions of railroad administration could be appropriately discussed. Of these, Mr. Shinn's paper on "Increased Efficiency in the Transportation of Freight" furnishes the most recent prominent example; but there are many similar examples in papers on terminal facilities, rapid transit and similar questions.

At the late convention a great deal was brought out having direct importance to railroad interests. Perhaps the most important from a financial point of view was the remarkably able and elaborate report on the "Preservation of Timber" summarized in our issue of May 12, the result of five years' labor by a committee of nine apparently, but in reality, as was an open secret at the convention, mainly the result of the individual labors of the Chairman, Mr. Octave Chanute. This is apt to be the case in all such investigations by committee, yet the conclusion which is often drawn, that the appointment of a committee is therefore a mere farce, is by no means a just one. If the committee has been originally well selected, even those of them who contribute nothing to the report directly will at least use some care about giving it the indorsement of their signatures, and thus add something to its weight; and the fact that many have to sign the report is in itself a strong check against the airing of mere individual notions. For the report in question

we may well believe that no such check was needed, but the evidence of the eight signatures appended certainly is, if nothing more, a desirable addition to the evidence of the report itself, that it is in the main as sound as it is careful and detailed.

The Society of Civil Engineers, in fact, has been very successful in drawing out careful and valuable committee reports, and its success seems to indicate that the investigation of suitable subjects in that way might well be continued. Another report presented at this meeting, on a "Uniform System of Tests for Cement," is a fine example of useful committee work. It is not yet finally complete in form for publication, since it was voted at the late convention, in the face of some opposition, that it was a little too full for expediency, and it was remanded back to the committee with request to extract certain data as to the admissible variations in the strength of "good" cement from the body of the report and to add it in an appendix simply as information instead of as recommended standards, on the ground that by establishing such limits, efforts to improve quality were discouraged. There was, however, no difference of opinion as to the great value of the report itself: the feeling seemed to be unanimous that, as has already been suggested in this journal, it would prove a great aid to sound practice, and one greatly needed, since without some formulation of what should be the requirements for good cement, it is almost a life study to learn how, not simply to make, but to interpret tests. The consequence is that such tests are frequently omitted, or so badly made as to amount to nothing, and hence that the country is filled with bad masonry which might have been made durable at the same cost had the only real security for a good quality of cement, thorough tests according to a regular system, been in force.

The only motion for the appointment of a new technical committee made at the convention was for one on the relation which the form of rails and wheels should bear to each other, a disputed question which has been recently discussed in these columns and elsewhere, and which would seem especially suitable for consideration by a well selected committee from such a body. The subject has been brought up on two or three occasions before the Master Car-Builders' Association, but it may be well to note again that it was not discussed or acted on even by report of a committee, except in an incidental and informal way, and that little or no general discussion of the merits of the question occurred. Whatever may be in truth the best practice, therefore, it would seem well that the subject should be discussed on both sides by those who have given special attention to the theoretical and practical questions involved, and the Society of Civil Engineers contains many such. Under the rules, however, the final decision as to appointing such a committee must be voted on by letter-ballot.

The committees on current tests and preservation of timber having been discharged, the only technical committee now existing is that on "Standard Time," which made an informal report on the 24 o'clock movement containing nothing especially new.

A paper of special interest to railroad men was that on "Power Brakes for Freight Engines and Cars," by Mr. Wm. P. Shinn, who has recently made an extensive series of tests on the efficiency of the American Brake Co.'s apparatus, which consists, as most of our readers know, of a steam brake for engine and tender and a direct-acting compression buffer brake for the freight cars. The tests were made under a great variety of conditions, with engine brakes only, buffer brakes and hand brakes only, etc., etc., and although Mr. Shinn had unfortunately not had time fully to complete his paper, it bore every evidence of being a valuable contribution to the basis of fact for deciding this important pending question. The experiments included a graphical record of the actual movements of the draw-springs during the stop and (in less perfect form) of the actual tension on brake-rods, with suitable arrangements for correctly determining the speed and length of stops. The value of this careful series of brake tests for indicating the normal efficiency of hand freight brakes as well as power, seems so great that the discussion of the efficiency of hand brakes referred to in our issue of May 29 will be postponed until Mr. Shinn's data are available.

Still other papers of notable interest to railroad men were those on "English and American Railroads Compared," by E. B. Dorsey, a full and careful paper; "Railroad Organization," by Charles Latimer; "Decay of Building Stones," by Prof. T. Egleston; "Preservation of Forests," by F. Collingwood, and several papers on questions in bridge-building, not to mention those on canal and hydraulic engineering, some of which had at least indirect interest to railroad men as such. These and other papers made a very full programme for, as was unanimously agreed, the most

successful and most business-like convention which the Society has ever had.

The wise selection of a place for meeting no doubt had a good deal to do with this result. The Society has heretofore met in some large city, in hotels crowded at times with other guests, and never particularly comfortable in the summer months. Meeting in such cities, it has been natural that excursions to alleged "points of interest" should take up a good deal of time, not always profitably. The opposite policy of meeting at some large retired summer-resort hotel, so early in the season that the convention shall be practically by itself, has proved so successful and enjoyable that it will not probably be readily abandoned.

THE LAKE SHORE AND THE MICHIGAN CENTRAL IN THE LAST HALF-YEAR.

The statement of the earnings, expenses, fixed charges etc., of the Lake Shore and the Michigan Central railroads for the first half of the year is a further illustration of the very bad condition of the business of the western connections of the trunk lines. These statements were originally made at the directors' meeting when dividends were declared—a duty from which the directors are relieved in these days. Made a few days before the close of the half-year, when the earnings are not fully known and the expenses still less so, they are, of course, not quite exact, but they show accurately enough the course of business from year to year. This year, moreover, the statement was made a week later than usual, so that there was less to "estimate."

The first half of last year was very unfavorable to the Lake Shore. Compared with the first half of 1883 (which was very favorable) there was, then, a decrease of 21 per cent. in gross and 22 per cent. in net earnings, while the profit per share of stock over fixed charges fell from \$3.53 to \$1.76, or just one-half. Now the results of the first half of this year compare as follows with that very unfavorable half-year:

	1885.	*1884.	Inc. or Dec.	P.c.
Gross earnings..	\$6,421,071	\$7,230,365	-\$798,294	11.1
Expenses.....	4,588,478	4,491,390	+ 97,188	2.2
Net earnings..	\$1,832,593	\$2,739,075	-\$906,482	32.8
Int., rents, etc..	1,918,199	1,860,335	+ 57,864	3.1
Surplus.....		\$868,740	-\$954,346	110.0
Deficit	\$85,606			
Profit or loss per share.....	- 17 cts.	+ \$1.76	- \$1.83	110.0

There was thus a decrease of one-ninth in the gross earnings for the half-year, and this, with a small increase in the working expenses, caused a decrease of nearly one-third in the net earnings, reducing them below the fixed charges, which have increased; so that the road which earned \$3.53 per share no longer ago than the first half of 1883, earned but 95¢ per cent. of its fixed charges this year. A comparison with the first half of 1883 shows the following decreases:

Gross earnings.	Expenses.	Net earnings.	*Fixed charges.	Surplus.
\$2,798,100	\$1,134,488	\$1,663,612	\$168,796	\$1,532,408
P. c. 30.3	19.8	47.5	9.6	105.0

* Increase.

What a revolution within the short space of two years! Yet the crops to be moved are larger this year than in 1883, and the actual total freight movement is quite as large this year probably, and the passenger movement on this road also, perhaps. The chief cause of the great decline is the opening of new lines, for to this we may charge the larger part of the great reduction in the prices received for transportation, which has reduced profits more even than the diversion of traffic, which has been important. It must not be supposed, however, that rates and profits could have been maintained if no new lines had been opened. We had passed through a period of extraordinary activity in all kinds of new construction—of dwellings, manufactories and machinery as well as railroads, and this had caused an exceptionally active demand for materials and labor of all kinds, and for transportation. With a more moderate growth in industrial enterprises we should never have had the unusually great prosperity following 1879. We should not have gone so high then nor so low now, and the fall would have been comparatively harmless, because shortened at both ends.

For nine successive years the results of the working

* The figures for 1884 are those given in the annual report for 1884, where they are given for each month. They differ from the estimate made a year ago, naturally, showing \$10,535 less net earnings, \$24,110 less expenses; but \$80,325 more fixed charges. They also differ from the figures in the quarterly reports made to the New York Railroad Commissioners last year, showing about \$29,000 less gross earnings, \$9,000 less expenses, and \$60,476 more fixed charges. The latter in the annual report are distributed equally among the several months of the year, and this statement of them, which we have adopted, may be the less correct. It is the chief cause why the profit per share, then reported as \$2.03 for the first half of 1884, now appears as \$1.76.

of this railroad in the first half of the year have been:

Lake Shore & Michigan Southern—Earnings and Expenses January to June, for Nine Years.

Year.	Gross earnings.	Expenses.	Net earnings.	Surplus over fixed charges.	Profit per share.
1877.....	\$6,461,133	\$4,628,119	\$1,833,014	\$445,247	\$0.90
1878.....	6,596,092	4,169,574	2,426,518	1,067,518	2.16
1879.....	6,938,482	4,217,921	2,720,561	1,370,561	2.77
1880.....	9,072,993	5,019,384	4,053,609	2,673,616	5.41
1881.....	8,954,926	5,285,164	3,669,762	2,307,762	4.66
1882.....	7,952,791	5,359,676	2,593,045	1,076,095	2.17
1883.....	8,119,171	5,722,966	2,396,205	1,746,802	3.53
1884.....	7,230,365	4,491,290	2,739,075	868,740	1.76
1885.....	6,421,071	4,588,478	1,832,593	*85,606	*0.17

* Deficit.

The earnings and expenses this year were thus even a little less than in that period of the deepest depression after the panic of 1873, the first half of 1877, and the net earnings are substantially the same as then. But the increase in fixed charges (also caused by the construction of competing railroads) has been such that the net earnings, which left a profit of 90 cents a share then, result in a loss of 17 cents per share now.

We see from the above that though the half-year was very favorable in 1883, it was by no means the most favorable the road has had. In the first half of 1880, the profit per share was no less than \$5.41, and in 1881 it was \$4.66. The \$2,673,616 of shareholders' profits in the first of these half-years, in five years, during which the growth of the country and of the railroad system which contributes traffic to this road has been enormous, has been transformed into a loss of \$85,606—a decrease of \$5.58 in the profits per share.

We know of nothing which shows more strikingly the fluctuations to which American railroad shares are exposed.

There may be some surprise that there should have been an increase instead of a decrease in working expenses this year; but this surprise should disappear when we observe that the decrease in these expenses from 1883 to 1884 was a heroic one—no less than 21½ per cent. It was largely in maintenance expenses, and such decreases cannot long be kept up.

The report to the New York Railroad Commission for the first quarter of this year showed a decrease of 12½ per cent. in gross and 33½ per cent. in net earnings compared with last year, and a deficit in meeting fixed charges of \$62,607. Taking the amounts reported for that quarter from those in the estimate for the half-year, we have as the results in the quarter ending with June:

	1885.	1884.	Inc. or Dec.	P. c.
Gross earnings.....	\$3,186,000	\$3,538,378	-352,378	10.0
Expenses.....	2,250,000	2,163,211	+86,789	3.9
Net earnings.....	\$936,000	\$1,375,167	-\$439,167	31.8
Int. and rents.....	959,000	902,205	+56,795	6.3
Surplus.....		\$472,962	-\$493,962	105.0
Deficit.....	\$23,000			

The decrease in gross and net earnings was somewhat less in this second quarter than in the first quarter of the year, and the deficit but one-third as great. Yet last year there was a profit per share of 95 cents per share (as then reported); this year a loss of about 5 cents.

The Michigan Central makes no quarterly reports nor does it give earnings and expenses by months in its annual reports. We have, therefore, to be content with the figures contained in these half-yearly estimates. Last year its decrease from 1883 was less than the Lake Shore's in gross earnings, but so much less in expenses that its decrease in net earnings was greater. Its profit per share fell from \$3.34 to 38 cents, which is less than in any other first half-year for which reports have been made. The returns this year compare as follows with those of that bad half-year:

	1885.	1884.	Inc. or Dec.	P. c.
Gross earnings.....	\$4,973,000	\$5,603,000	-\$630,000	11.3
Expenses.....	3,886,000	4,216,000	-330,000	7.8
Net earnings.....	\$1,087,000	\$1,387,000	-\$300,000	21.6
Int. and rents.....	1,320,000	1,280,000	+40,000	3.1
Surplus.....		107,000	-340,000	318.0
Deficit.....	233,000			

The Michigan Central receives two-thirds and the Canada Southern one-third of the surplus. This gives a loss of about 89 cents a share to the Michigan Central this year, against a profit of 38 cents last year and to the Canada Southern a loss of nearly 50 cents a share, against a profit of 24 cents last year. The decrease in profit per share has been \$1.27 on the Michigan Central, 74 cents on the Canada Southern, and \$1.93 on the Lake Shore.

The rate of decrease on the Michigan Central system was nearly the same as on the Lake Shore in gross earnings, but it had a considerable decrease in expenses, while the Lake Shore had a small increase. The result is a decrease in net earnings of but 21½ per cent. on the Michigan Central, against 33½ on the Lake Shore. This is because the Lake Shore made much the greater reduction of expenses in 1884. If we compare 1885 with 1883 we shall find the reductions in expenses more nearly alike, namely, 19½ per cent.

on the Lake Shore and 15½ per cent. on the Michigan Central. The latter's decreases from 1883 have been:

	Gross earnings.	Expenses.	Net earnings.	Fixed charges.	Surplus.
P. c.....	\$1,767,090	\$705,000	\$1,062,090	*\$110,000	\$1,172,090
	26.2	15.3	49.4	9.1	124.4

* Increase.

The rate of decrease in both gross earnings and expenses has been less than on the Lake Shore; in net earnings, nearly the same. Both have a considerable increase in fixed charges, and both have transformed a surplus of profit available for dividend into a deficit, which is larger on the Michigan Central because its surplus in 1883 was much less than the Lake Shore's.

The aggregate gross and net earnings, working expenses and profits over fixed charges of the Michigan Central and Canada Southern, in the first half of the year for eight successive years have been:

Michigan Central and Canada Southern Earnings and Profits in the June Half-Year for Eight Years.

Year.	Gross earnings.	Expenses.	Net earnings.	Surplus.
1878.....	\$4,285,628	*\$3,172,863	\$1,112,765	\$126,066
1879.....	4,605,691	*3,369,318	1,236,373	329,447
1880.....	6,496,869	4,089,021	2,407,848	1,363,978
1881.....	6,158,532	4,402,812	1,755,720	563,408
1882.....	5,568,283	4,473,048	1,095,235	+144,910
1883.....	6,740,000	4,591,000	2,149,000	939,000
1884.....	5,603,000	4,216,000	1,387,000	107,000
1885.....	4,973,000	3,886,000	1,087,000	+233,000

* For these years the expenses of the Canada Southern for the first half of the year are assumed to be the same proportion of earnings as for the whole year, which is doubtless not quite accurate.

† Deficit.

Thus the gross earnings this year, though they have fallen off largely, remain much greater than in 1878 and 1879, and the net earnings are nearly as great as in 1878 and 1882. This is not the first time there has been a deficit in this half-year, there having been one in 1882, before the union of the two roads. It is now evident that this union has saved the Canada Southern from bankruptcy. Its traffic is nearly all through, and it is questionable whether it has earned its working expenses this year. Certainly it can have earned, by itself, but a small part of its fixed charges. The advantage of the union to the Michigan Central is seen only when through rates are profitable, as they were in 1880 and 1883.

For the entire calendar year 1884, the Michigan Central earned over fixed charges a profit of but \$41,000 for itself and half as much for the Canada Southern; thus the united roads had a deficit of \$45,650 in the last half of the year, against a profit of \$107,000 in the first half. Judging by the crop prospects, traffic must be less in the last half of this year than it was in the corresponding half of last year. At present, rates are very much lower than then, and although they may be mended, it is altogether improbable that they will average as high as last year. The railroads have gone about as far in reducing expenses as is possible, and have now done it so long that many postponed renewals can be neglected no longer. It is therefore not easy to see why much better results can be expected from the half-year just begun than from that just past. The deficits of these two companies are small, however, and though they may be further increased during the remainder of the year, it will not be difficult for them, with their proved capacity for making large profits under favorable circumstances, and the great financial resources of the men who control them, to face for some time to come the present unfavorable conditions. But it is evident that they cannot afford to have matters grow worse, and that with the present conditions permanent both of them must be ruined.

MAY EARNINGS.

Our table of railroad earnings in May has returns from 75 railroads, whose aggregate mileage and earnings and average earnings per mile were:

	1885.	1884.	Inc. or Dec.	P. c.
Miles.....	63,439	62,342	+1,097	2.3
Earnings.....	\$24,746,489	\$27,148,086	-\$2,401,597	8.8
Earn. per mile.....	462	520	-58	11.1

This is a larger decrease than in April even, when it was very much larger than in any previous month. Only 20 of the 75 roads had an increase in total earnings in May, and only 16 an increase in earnings per mile, and these increases were for the most part by small roads which still have light earnings per mile.

All the American railroads northwest of St. Paul have a large decrease in earnings, that of the Northern Pacific being 30½ per cent.; of the Manitoba, 22 per cent. The latter has had a continuous decrease since 1882, though its mileage has been increased nearly 50 per cent. meanwhile. Its earnings in May for five years have been:

Year.	1881.	1882.	1883.	1884.	1885.
Earnings.....	\$382,642	\$558,903	\$727,490	\$621,167	\$448,317

The earnings per mile have fallen from \$904 in 1882 to \$350 in 1885. They were formerly extraordinarily large for a new road, and they are now more nearly like those of other Western railroads. The

Canadian Pacific's gain very likely was due to the large amount of military transportation in connection with the Riel insurrection. In the aggregate the four roads northwest of St. Paul show a decrease of 15½ per cent. in total earnings, and of 20 per cent. in earnings per mile, against 15 per cent. in April.

Twelve other railroads northwest of Chicago report an aggregate decrease of 6 per cent. in total earnings and 9½ per cent. in earnings per mile. Four show an increase in total earnings, but only two—and these little roads—have any increase in earnings per mile. Some of the decreases are large, as 24½ per cent. in earnings per mile by the Central Iowa, 22 by the Cedar Rapids & Northern, 32 by the Marquette & Ontonagon, and 21½ by the Milwaukee, Lake Shore & Western. The three great roads, however, which have more than 70 per cent. of the total mileage, had but moderate decreases. In the aggregate, this group fared better than the average.

The lines reporting west and southwest of St. Louis include but a small part of the mileage and exclude all the more important roads in that territory. The eight reporting had a decrease of 6 per cent. in total earnings and of 11 per cent. in earnings per mile—just about the average of the country. The three Texas roads reporting all have large decreases, and the Texas & St. Louis earned but \$86 per mile. Only one road, the Fort Scott & Gulf, makes any increase in earnings without increase in mileage, and its gain is trifling. This group had an increase in earnings in April.

North of the Ohio, east of the Chicago & Alton Railroad and west of Pennsylvania there are reports from 18 roads, including the Wabash, which has a large mileage further west. These have a decrease in mileage, so that with 9.4 per cent. less total earnings the earnings per mile were reduced but 5.8 per cent.—much less than the average. Five roads made gains, including the Eastern Illinois (12½ per cent.), the Illinois lines of the Illinois Central (½ per cent.) and the Nickel Plate (4½ per cent.). The latter has never before reported its earnings for a month. The larger decreases are 24 per cent. by the West Michigan, 25½ by the Detroit, Lansing & Northern, 23½ by the Flint & Pere Marquette, and 19½ by the St. Louis & Terre Haute main line. Seventeen of these 18 roads had an aggregate decrease of \$494,475 in April, against \$361,481 in May.

South of the Ohio and Potomac and east of the Mississippi 17 roads report, showing a decrease of 7 per cent. in total earnings and 8 per cent. in earnings per mile. Only three show an increase in total earnings—the Southern Division of the Illinois Central, the Western North Carolina and the New Orleans & North-eastern, and only the latter has an increase per mile of road. There are some large decreases—22¾ per cent. by the Alabama Great Southern, 23½ by the Florida roads, 16 by the Vicksburg & Meridian, and 15 by the Nashville & Chattanooga. In the aggregate the same group of roads had a decrease of \$19,749 in April and one of \$178,545 in May.

We have reports from 13 Eastern roads—north of the Potomac and east of Ohio. Three little ones show gains in earnings, but the 13 in the aggregate suffer decrease of 10 per cent. in total earnings and 11½ per cent. in earnings per mile. Of the great roads the Grand Trunk loses 10½ per cent., the Pennsylvania 8½, and the Reading 16. More than two-fifths of the aggregate decrease of the 75 roads reporting in the United States fell on these 11 Eastern roads, which had about 36 per cent. of the aggregate earnings of the 75. The Southern roads had a slightly greater mileage, but not one-fourth the earnings of the Eastern group; the Northwestern group, with 56 per cent. more miles, had 36 per cent. less earnings. Ten of the Eastern roads had an aggregate decrease of \$1,046,200 in April and of \$998,544 in May.

The worst showing in May is by the roads northwest of St. Paul, and next to that by the Eastern and Southwestern roads; the best is by the group north of the Ohio, which excludes the principal roads in the territory. The roads in that section, as a whole, are probably suffering more than any others in the United States.

TRAIN RULES AND TRAIN MOVEMENT.

If the distinguished pulpit orator of Brooklyn were in need of further illustrations of the doctrines of "evolution" and of "natural selection," the history of train rules in this country would afford him excellent material: and probably the "survival of the fittest" would be found also to be well exemplified.

A comparison of the train rules of the great lines reveals a common origin and a development along parallel lines from similar experiences; there are only differences of detail to be noted. Beginning with a single track, with a small business, over short dis-

ances, the earlier codes, of course, did not provide for the contingencies which are recognized now that we have two, three and four tracks, with the constant support of the telegraph to maintain the circulation.

So there will be found many survivals of old customs in most of the codes; as, for instance, the 15-minute rule for delays at meeting points, which has not disappeared yet from all the regulations, although rendered obsolete by the unfailing service of the telegraph. Doubtless this should be everywhere repealed and a more modern method substituted.

The same may be said of many train rules which are being superseded by the constant supervision and communication of the train-dispatcher with every train; and we may anticipate a fuller development in this direction as facilities of signaling and telegraphing are increased.

The double-order system of train orders is one step in this course; so is the abandonment by many roads of that superstition which regarded it as essential to have the engineer's signature to the repeated *special order*, which was addressed to him and to the conductor. So far as we know, those roads which have once abandoned the practice of requiring it have not resumed it. Let any one regard the execution of this feat by an engineer on a stormy winter's night, when he alights from an express train, covered with frost and snow dripping icicles from his sleeves and beard, a torch in one hand and an oil-can in the other, his mind intent on *making time*; we think the observer will be convinced that the less penmanship there is required of that man, at that moment, the better the chance that he will remember the order that is read to him. All admit, of course, that a great loss of time may be, and generally is, occasioned by exacting from the engineer this literary effort.

And with improved methods of signaling and a more certain reliance upon electric telegraphing, and with demands for high speed, we think the custom of giving orders to the train-men, except through the signals, will gradually become disused; indeed, upon double track it should be so already. The signal should say to the train-men "go ahead," or "stop;" the dispatches which are to decide this matter should be exchanged between the train-dispatcher, and the operators, without delaying the trains to settle the business. These persons are at peace, or should be; they are comfortably housed, not concerned with collecting fares, unloading freight, hastening everybody to make time, nor with any other of the multifarious duties of conductors, which render it probable, as experience has shown, that the train-men will forget or misunderstand their orders. The dispatcher and operators are therefore much more at liberty to attend to orders and to the protection of the trains than the harassed and over-burdened train-men can be.

While business is small, as on country railroads, where an operator is required to act also as freight agent, ticket agent, baggage agent, switch-tender and so forth, it is quite as safe to send orders to the train-men; but on large roads, with great traffic and fast trains, the railroad telegraphers should have no other occupation than to govern the movement of the trains by signal, under instructions from the dispatchers.

Under such a system a special train may be started at any moment upon the shortest notice and run through as rapidly and safely as a scheduled train, and with no more hindrance to the traffic in either direction.

It is toward this consummation that all train rules and all systems of train movement should tend, in the light of our present experience—for we are not yet able to foresee what may be effected by the improvements in communication with the moving train which recent experiments permit us to hope for.

The change of the Mobile & Ohio next week will leave only two of the important lines running southward from the Ohio River of 5 ft. gauge, and both of them are already making arrangements for the change to standard gauge. The Louisville & Nashville will, it is understood, make the change before the close of the present year, while the Cincinnati, New Orleans & Texas Pacific will follow suit as soon as a definite arrangement can be made with the Cincinnati Southern trustees. The 5 ft. gauge will then be practically limited to the seaboard Southern States, and will doubtless soon disappear. On the Atlantic Coast Line the standard gauge now extends as far south as Wilmington, and the roads in that line from Wilmington to Charleston will undoubtedly be soon of the same gauge, while the Savannah, Florida & Western is understood to be ready to make the change at the same time with its connecting lines to the northward. The Richmond & Danville and its controlled

lines are already preparing to abandon the old gauge, although no definite time has been stated. By the end of next year it is altogether probable that the Norfolk & Western and the East Tennessee, Virginia & Georgia will be the only important lines still retaining the 5-ft. gauge, and their alteration to the standard will then become actually a matter of necessity, the time depending chiefly upon the financial condition of the companies.

The west-bound pool of the New York roads continues. The West Shore had given notice of withdrawal from it dating from June 10; before that day arrived it was agreed to continue till July 1, and now a further extension has been made till Aug. 1. The regular rates are now, it must be remembered, extremely low. But even these are not always adhered to, some engagements having been made for the future at lower rates. There is, however, a disposition to prevent any further demoralization, and to cling to the organization through which rates may in time be restored.

The efforts continue to form some arrangements among the western connections of the trunk lines which will enable them to stop carrying at ruinous rates. The passenger men propose to make a pool covering all the competitive business, corresponding to that which the eastern trunk lines had till recently, but which the western roads never succeeded in establishing. The Central Traffic Association meets as we go to press, at Niagara Falls, where further steps in organization are to be taken and a Commissioner chosen. Even if these efforts are not immediately fruitful of results, they may produce an organization which will be of great value when a general advance of rates becomes possible. The east-bound and interior passenger business has already been much improved by the efforts made, and that there is an earnest desire to effect something is shown by the agreement of the roads from Chicago eastward to cease paying commissions altogether—which not long ago some of them seemed never likely to consent to.

The through shipments eastward from Chicago of freight of all kinds in the month of May, by the complete report, have been as follows, in each of the last seven years, in tons:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
280,355	127,523	171,431	118,350	142,277	258,874	300,875

Thus the shipments this year were larger than in any previous May with the possible exception of 1879. Since 1883 the shipments of certain junction points have been included, which shipped about one-eleventh as much as Chicago itself, and if this were true in May, 1879, the total shipments then from the points now reporting were 305,800 tons, or a little more than this year. At that time, however, probably the transfers at junction points were not so large as they became afterward. Allowing 9 per cent. for them, the shipments this year were twice as great as in 1880, 1882 or 1883, two-thirds greater than in 1881, and 16 per cent. more than last year. They were very great, indeed, and if rates had been fair the business would have been very satisfactory. But in all the years of very heavy shipments, 1879, 1884 and 1885, the rates have been extremely low, and indeed the heavy shipments were due very largely to the low rates; for in May the grain mostly goes by water if the railroads charge a profitable rate. As it is, the shipments were smaller in May than in any other month of this year except February. Shipments are always less in May than in April.

For the five months ending with May the total Chicago shipments have been, in tons:

Year.	Tons.	Year.	Tons.
1879.	1,228,908	1883.	1,122,182
1880.	573,330	1884.	1,329,360
1881.	1,120,624	1885.	1,593,503
1882.	886,875		

Thus the shipments were very much greater this year than in any other, and about one-fifth more than last year, when rates averaged but little higher than this year.

The corn movement, though heavier in June than in May, was not so great as it usually is in June after a year of large production, and very decidedly lighter than in the winter months, which is remarkable. For the four weeks ending June 20, the receipts of the Northwestern markets were 8,118,075 bushels, against 5,416,718 in the four months previous, 10,176,401 in four March weeks, 9,276,525 in four February weeks, and 9,079,547 bushels in four January weeks; while in the four corresponding weeks ending June 20 the receipts were 8,090,326 bushels last year and 10,375,128 in 1883. For the whole year down to June 20 the corn receipts of these Northwestern markets have been:

1882.	1883.	1884.	1885.
42,979,341	59,703,747	51,500,116	53,907,928

In view of the fact that the production of corn

marketed in these years increased from 1,194 millions of bushels in 1881 to 1,617 millions in 1882, 1,551 in 1883 and 1,795 in 1884, the movement this year has been surprisingly light—only 11 millions more than in 1882, though there were 601 millions more in the country.

It is possible, however, that the receipts of the Northwestern markets do not include so large a share as usual of the total corn marketed. The very low rail rates have prevented any advantage in shipments by the lake ports, which are the chief ones reporting, and more than usual may have gone through to the East without reporting, and certainly more than usual has gone south, because the corn crop was light there last year; and most of the movement south is not reported. The receipts at the Atlantic ports for the year down to June 20 have been:

1882.	1883.	1884.	1885.
18,637,383	45,369,797	26,264,745	48,236,516

Thus though the Northwestern receipts were but 2,400,000 bushels more this year than last, the Atlantic receipts were 22,000,000 greater this year. But for the last four weeks the Atlantic receipts have been a little less than last year and a third less than in 1883, as follows:

1882.	1883.	1884.	1885.
2,824,554	7,632,094	5,398,187	5,047,244

The price of corn is proportionally not so low as the price of wheat, and one reason why no more corn has been marketed is that an unusual quantity is consumed or to be consumed on the farms. The stocks were nearly exhausted at the close of last year, and farmers with much stock to feed cannot afford to take the risks of a light crop this year. Then though there were fewer hogs to consume the corn last winter than in other years of a large crop, a much larger amount than in those years is required for fattening cattle, which are brought by rail from the plains to the corn-growing country to be there prepared for market. Still, it seems strange that there should not have been more corn marketed since May. The weather has been such that farmers could spare little time from their fields it is true, but this was true in 1883 and 1884.

While the corn movement was comparatively light in June, the wheat movement was most decidedly heavy. For the three weeks ending June 20, the receipts of the Northwestern markets were:

1882.	1883.	1884.	1885.
1,822,683	2,839,985	2,438,853	3,575,249

Thus the receipts this year were nearly one-half more than last year, and one-fourth more than in 1883, when the crop was nearly as large. But wheat even this year makes but a small part of the grain movement at this season. The bulk of the crop is marketed earlier.

Thus the total receipts of the Northwestern markets in the five months ending with December and the 5½ months ending June 20 have been:

1881-82.	1882-3.	1883-4.	1884-5.
Aug. 1 to Dec. 31. 26,132,747	51,817,672	51,703,197	72,579,398
Jan. 1 to June 20. 14,007,815	26,136,008	14,527,501	24,331,945
Total	40,140,562	71,933,740	96,911,343

Thus this year three-fourths and in other years something like that proportion of the receipts of the 10½ months were in the first five months of the crop year.

The amount marketed this year is large without precedent, and the increase over 1882-83 is greater than the whole increase of the crop of 1884 over that of 1882 (25 millions increase in Northwestern receipts and but 8½ millions increase in national production). Moreover the flour receipts have been 5 per cent. larger this year, amounting to an increase of 2,100,000 bushels. Down to June 20, there had come to the Northwestern markets 187,800,000 bushels of wheat (including flour) of the crop of 1884, against 110,800,000 bushels of the crop of 1882 marketed at the same time in 1883, while the crops were 504.2 millions in 1882 and 512.8 in 1884. But an unusually large proportion has remained at those markets this year, the arrivals at the seaboard having been, since August, 11 million bushels less this year than in 1882-83.

Regulating Rates in Massachusetts.

The long session of the Massachusetts Legislature resulted in a comparatively small amount of railroad legislation. A number of special acts concerning various railroad corporations were passed, the most important being that authorizing the consolidation of roads composing the Hoosac Tunnel line; but there were only four general laws adopted, and those, though of some importance, are not of much general interest, unless it be the act to authorize the Railroad Commissioners to forbid or regulate the sounding of locomotive whistles in certain cases. That act provides relief from a serious grievance in some populous localities. There is one other act of a special character, which, however, in its bearings is of general interest, as a new departure in the railroad

policy of Massachusetts. The Legislature of that state has always, except in the case of the very earliest charters, reserved the right to alter or amend such charters, and to pass any general laws affecting them. One of the general laws, which was first incorporated in the charters, provides that fares, tolls, and charges shall at all times be subject to revision and alteration by the Legislature. Originally this was limited by a proviso that they should not be so diminished as to reduce the income of a road below 10 per cent. on its capital stock; but in 1870 this proviso was repealed, and at present the law stands that such fares, tolls and charges "shall at all times be subject to revision and alteration by the General Court or by such officers or persons as it may appoint for the purpose, anything in the charter of a railroad corporation to the contrary notwithstanding."

Although this power of revision has always been claimed and admitted, the Legislature of Massachusetts has wisely refrained from exercising the power, and the mere existence of the right to revise rates has probably had a restraining influence on the railroad companies, so that there has been less cause for complaint on the part of the public than in some other states. Since the establishment of the Board of Railroad Commissioners all complaints in relation to fares and rates have been made to that board, and if, after a hearing, it recommended a reduction, the recommendation has almost invariably been promptly complied with. But during the recent session of the Legislature a case occurred which was thought to call for the exercise of its reserved right.

Certain manufacturers and traders of Berkshire County complained to the Legislature of unreasonable rates and of discrimination, on the part of the Housatonic Railroad Company, a Connecticut corporation, which works the railroads in Southern Berkshire under a perpetual lease. The matter was referred by the legislative committee to the Railroad Commissioners, who gave a hearing, and subsequently recommended certain reductions in rates. The President of the railroad admitted that some of the complaints were well founded, and after considerable delay promised to conform substantially to the recommendations of the Commissioners. These facts were reported back to the legislative committee, who still had the subject in charge. But notwithstanding several reminders sent to the President the delay continued, and the aggrieved parties renewed their demand for relief. The end of the session was near, and as there was apparently a determination on the part of the railroad company not to comply with the recommendations of the Commissioners, a bill was reported and promptly passed, authorizing the Railroad Commissioners to fix any or all rates on the railroads operated by the Housatonic Railroad Company between different points in Massachusetts, and maximum rates between any point in Massachusetts and any other point or place. The Legislature has thus undertaken for the first time to act under its reserved rights to revise rates. It is safe to say that no Massachusetts corporation would have allowed matters to come to this pass. But the Housatonic Company has once before disregarded the recommendation of the Massachusetts Commissioners until compelled by the Legislature to comply.

It is understood that the aggrieved parties still complain that they have no relief, and call upon the Commissioners to act under the law, which they will of course do, unless the managers of the railroad at last realize that they had better make a voluntary concession of what the Commissioners have already declared to be reasonable and equal rates.

Chicago through rail shipments eastward were nearly the same week before last as in the two weeks previous, but last week they were much smaller, and indeed were the smallest of the year. For six successive years the shipments have been for the weeks ending June 20 and 27, in tons:

Week to.	1880.	1881.	1882.	1883.	1884.	1885.
June 20.....	68,360	54,266	28,753	27,449	53,638	43,308
June 27.....	55,394	81,660	25,918	30,718	59,364	34,917

In both weeks the shipments this year were less than in any of the others except 1882 and 1883. Rates are supposed to have been maintained in 1880, 1882 and 1883.

The last week was the first week of the railroad war in 1881, and the shipments then were the largest of the year. In none of these years were the rates as low as this year, however. Last year this was the last week of shipments at the 15-cent rate, an advance to 20 cents being made then, which was followed by a large reduction of the shipments.

The number of tons shipped and the percentage going by each railroad in each of the last six weeks has been:

Tons:	Week ending					
	May 23.	May 30.	June 6.	June 13.	June 20.	June 27.
Flour.....	9,136	5,980	5,354	3,617	3,843	4,016
Grain.....	33,691	27,424	30,120	30,488	31,233	21,562
Provisions.....	7,165	6,965	7,009	8,541	8,242	8,439
Total.....	49,992	40,369	42,483	42,646	43,308	34,917
Per cent.:						
C. & Grand T.....	8.4	9.1	6.2	14.4	21.4	11.3
Mch. Cen.....	28.8	22.7	22.0	21.1	14.4	17.6
Lake Shore.....	13.8	15.3	16.3	15.1	10.7	12.3
Nickel Plate.....	11.7	11.3	13.6	11.4	15.7	14.4
Ft. Wayne.....	14.5	15.0	16.8	12.7	16.6	21.0
C. St. L. & P.....	6.4	9.8	7.6	8.5	7.4	7.7
Balt. & Ohio.....	13.2	11.2	16.7	9.2	6.3	8.3
Ch. & Atlantic.....	3.9	5.6	6.8	7.6	7.5	7.4
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

The decrease last week, we see, was wholly in grain, there being a large increase in flour and a small one in provisions. The Minneapolis mills are again producing, which tends to increase flour shipments. In the aggregate, however, the shipments last week were 19 per cent. less than the week before. In percentages, the Chicago & Grand Trunk carried nearly double its usual share week before last, but fell back to about its average last week. The Nickel Plate both last week and the week before had an unusually and undesirably large share, and the Fort Wayne also had a larger share than

before for a long time; but this is less undesirable in its case because it carries a very large part of the provisions, for which a higher rate is obtained than for flour and grain. For these six weeks the aggregate percentages of the three Vanderbilt roads and of the two Pennsylvania roads have been:

Vanderbilt.....	54.3	49.3	51.9	47.6	40.8	44.3
Pennsylvania.....	20.9	24.8	24.4	21.2	24.0	28.7

It should be remembered that there is some high-class traffic not included in this report, which traffic may make the percentages of earnings from the through freight quite different from those given above.

The prevailing rate last week seems to have been 13 cents per 100 lbs. for grain and flour. The lake propellers, after having carried for some time at 1 cent a bushel for corn and 1½ for wheat to Buffalo, agreed to take nothing at less than 1½, and seem to have got this rate for wheat at least; but they did not get much last week at any rate. With this lake rate and 2½ cents for corn and 3 for wheat from Buffalo to New York, there is nothing to obstruct a free movement of grain to the seaboard but a lack of demand at prices acceptable to Western holders. But water rates would soon go up if the railroads should advance their rates, and the railroads would carry what is consumed in the interior at a 20-cent rate just the same as they do now.

Record of New Railroad Construction.

Information of the laying of track on new railroads in the current year is given in the present number of the *Railroad Gazette* as follows:

Augusta, Gibson & Sandersville.—Extended southwest to Bath, Ga., 10 miles.

Beech Creek, Clearfield & Southwestern.—A branch is completed from Munson, Pa., to New Millport, 31½ miles.

California Southern.—Extended from San Bernardino, Cal., northward 12 miles.

Eureka & Eel River.—Completed from Eureka, Cal., southwest to Eel River, 26 miles.

Indiana, Alabama & Texas.—Completed to a point twenty miles north by west from Clarksburg, Tenn., an extension of 10 miles.

Kansas City Belt.—Completed in the outskirts of Kansas City, Mo., 6 miles.

Kansas City, Clinton & Springfield.—Extended southwest to a point five miles from Clinton, Mo., 39 miles.

Minnesota & Northwestern.—Extended from Cascade, Minn., southward to Dodge Centre, 45 miles.

Stewartstown.—Completed from Stewartstown, Pa., west to New Freedom, 7 miles.

This is a total of 186½ miles, making 864 miles thus far reported for the current year. The new track reported to the corresponding date for 14 years past has been:

Miles	1878.....	Miles	1879.....
1885.....	864	1878.....	691
1884.....	1,213	1877.....	689
1883.....	2,109	1876.....	740
1882.....	4,415	1875.....	426
1881.....	2,381	1874.....	690
1880.....	2,190	1873.....	1,518
1879.....	1,008	1872.....	2,754

This statement covers main track only, second or other additional tracks and sidings not being included.

Contributions to a National Museum Illustrating Steam Transportation.

Mr. J. E. Watkins, of Camden, N. J., who has recently been appointed Honorary Curator of the section of Steam Transportation (Railroads and Steamboats) in the United States National Museum, in connection with the Smithsonian Institution, is authorized by the Institution to treat in the interests of the National Museum with any persons who may be willing to aid in the development of this section, and to add to the collection already in the Museum objects illustrative of the history and growth of this industry in the United States. Specimens thus acquired will be exhibited in the Museum in the name of the donor. Mr. Watson has issued the following circular:

In order that the collection in connection with this section may be made as complete and creditable as possible your co-operation is earnestly requested.

The Pennsylvania Railroad Co. has already presented to the Museum Locomotive No. 1 (of the Camden & Amboy Railroad Co.), more familiarly known as the "John Bull," together with a section of the original track, laid with some stone blocks, etc., upon which this, the oldest engine on their system, ran. Many other valuable relics from other railroads have also been furnished.

I shall be glad to receive information as to the whereabouts of parts of such locomotives, cars, steamboats, track, etc., as may be of historic value, together with authentic drawings of early railway appliances, also old tickets, old time-tables, systems of old baggage checks, etc.

A nation which contains within its borders over 120,000 miles of railway, representing a stock and bonded capital of over 7,000,000,000 of dollars, should be zealous to preserve the history of the efforts of the pioneers in railway construction and equipment, which, during the last half century, have had such an immense influence upon our growth and the development of our civilization.

With this end in view the authorities of the National Museum have organized this section, by which they hope to perpetuate the history of the birth and development of the American railway and steamboat, as well as to add an interesting and instructive feature to the Museum, which is annually visited by between two hundred and three hundred thousand persons, hailing from every state and territory in the Union, as well as from almost every nation.

TECHNICAL.

Signals on an English Railroad.

At a recent meeting of the Institute of Civil Engineers in London, England, the paper read was on "The Signaling of the London & Northwestern Railway," by Mr. Arthur Moore Thompson.

In this paper the author first referred to the disadvantages

arising from signal work being left in the hands of district engineers, and he advocated its being carried out by an independent department and superintended by an engineer specially trained for the work. He traced the development of the system on the London & Northwestern Railway since 1873. In that year the directors of the company, who had already spent more than £1,000,000 on the work, and in view of a further large outlay, instructed their Chief Mechanical Engineer to prepare the necessary shops and machinery at Crewe for the manufacture of every appliance to carry on the signaling of the line. Large fitting and erecting shops, carpenters' shops and saw-mills, with special machinery, were provided; and arrangements were made for the rolling of the Bessemer steel-point rod, locking-bar, and other iron, and the stamping of corrugated steel signal arms; while plans were prepared of the locking apparatus and other requisite appliances, a signal department was instituted, and an engineer appointed to superintend the work. A brief description of the growth of the locking apparatus was then given, up to the date of the introduction of the frame now used by the company, known as "lever-locking," the invention of Mr. F. W. Webb, so called to distinguish it from "catch-rod-locking." These two methods of locking, together with the signal-cabins, signals, signal-slots, adjusting apparatus, point-rod compensators, facing-point locks, detector-bars, and other kinds of apparatus, were described in detail. Attention was directed to a want of improvement in the grouping and general arrangement of the signals for four lines of railway and at important junctions; and after giving an account of a simple plan for cheaply interlocking unimportant roadside stations, adopted on the London & Northwestern Railway at the suggestion of the author, statistics were introduced of the number of men employed, signal-cabins, signals, and the cost of maintenance. The appendix contained a copy of the company's rules for the sighting of signals, and for the general work of the department.

Regulator for Gas-Burning Furnaces.

Mr. G. Westinghouse, Jr., of Pittsburgh, Pa., has patented a regulator for the gas and air supply of a furnace in which gas is used as fuel. The supply of gas and air is regulated in accordance with the variations of the steam pressure, in order to maintain such pressure uniformly at the normal condition. The steam within the boiler acts, through a pipe, upon a flexible diaphragm, and a pressure-plate tends to move the gas-supply valve downward toward its seat and to elevate the outer end of a lever to close the air-supply valve. The downward pressure of the steam is opposed by the gravity of a counter-balance, which tends to elevate the inner and depress the outer end of the lever, and to thereby open the gas and air-supply valves. By a proper adjustment of the counterbalance the equilibrium between the opposing forces of pressure and gravity may be established.

Breaking Steel with Dynamite.

The Lackawanna Iron & Coal Co. at Scranton has for a long time been trying to devise some way of breaking up a lot of 6-ton chunks of steel so that they could be utilized. These mighty masses of metal became chilled in the ladles from time to time on account of the outlets getting clogged, so that the workmen were unable to pour the molten steel into the ingot molds. They have been accumulating for several years, and the company has tried in various ways to break them, but the trials have been devoid of any result until now. A 3,000-lb. oblong weight of steel dropped on one of the 6-ton bell-shaped masses from a height of 50 ft. failed to break it or even to crack the surface, and after this experiment had been repeated 40 or 50 times it was abandoned. Then one of the workmen suggested that powder be used as an explosive to shatter the chunks. So a hole 1½ in. in diameter was drilled into the centre of one of the chunks for a distance of 18 in. It was filled with powder, and a steel plug with a priming hole in it was screwed into the orifice. When the powder was ignited by a slow match, the workmen who had retired to a safe distance, expected to hear a terrific explosion. The powder had no more effect on the mass than so much water would have had.

A man who was used to handling dynamite was then asked to try his skill on one of the chunks. The steel plug was unscrewed and a dynamite cartridge 5 inches long was placed in the hole. Then the plug was screwed in again and the dynamite exploded. All that the dynamite did was to blow the plug out. The next thing done was to place two cartridges of dynamite in the hole and to tamp them down with sand. When they exploded the force all went out of the hole in the wake of the sand. The dynamiter said that he would keep on adding one cartridge at each trial until the hole wouldn't hold any more, and he put in three cartridges the third time and tamped them down with sand. The explosion was heard in every part of the city. The three cartridges had cracked the 6-ton mass into a number of pieces small enough to be melted. One piece, which measured 1,200 lbs., was thrown more than 100 ft. Over 30 chunks of the same size will be similarly treated during the summer. —*American Manufacturer.*

THE SCRAP HEAP.

Mr. Garrett's Estate.

A Baltimore dispatch says: "An inventory of the estate of the late John W. Garrett, President of the Baltimore & Ohio Railroad, was filed this morning in the Orphans' Court of Baltimore County by the Executors, Messrs. William F. Frick and T. Harrison Garrett. The gross amount returned by the appraiser was \$5,774,509. This does not include Mr. Garrett's interest in the firm of Robert Garrett & Sons, banking house, and none of his real estate. It embraces his gallery of paintings, bonds, stocks and money. The moneys invested with Robert Garrett & Sons, and not mentioned in the inventory, include 30,000 shares of Baltimore & Ohio stock, which, according to the testator's will, shall be held intact and controlled by the Trustees in common until 20 years shall have elapsed, when these shares may be equally divided among the three children, namely, Robert, the President of the Baltimore & Ohio; T. Harrison, and Mary Elizabeth Garrett. The remainder deposited with the firm, and which forms the nucleus of the capital of the bank, will not be returned, so that no exact estimate can be formed of the total wealth of the dead railroad king. It is conceded, however, that this portion is greater than all the rest, including the real estate, which is valued at not less than \$3,000,000 to \$4,000,000. According to this, the entire estate will not fall short of \$15,000,000."

A Railroad Semi-Centennial.

The Boston & Providence Railroad completed its first half-century on June 20. The road was chartered June 22, 1831, and the work of constructing the first section of 18 miles between Boston and Sharon commenced in the latter part of 1832. The second section of 14 miles, Sharon to Attleboro, was commenced in 1833, and the remaining section of 12 miles to Providence in 1834. The road was opened to Canton, 14 miles, in 1834, and June 26, we believe, completes the first half-century that the road has been in operation over the entire distance between Boston and Providence. And although the first 25 years of the history of the

company was not quite so profitable as the second, the fact that dividends during the time from 1835 to 1859, both inclusive, averaged $5\frac{1}{2}$ per cent., shows that a very fair return was made upon the capital invested, which was \$1,500,000 in 1835 and \$3,160,000 in 1859. The earnings in 1836, the first full year operated, were \$135,583, against expenses of \$83,719; this left net earnings of \$51,864 upon a road of 43 $\frac{1}{4}$ miles in length. The first dividend was paid in 1837, when it was a 4 per cent. one; the next two years the dividends were 8 per cent., and again in 1846 8 per cent. was paid. These, in fact, were the only 8 per cent. dividends paid in the first 25 years' operation of the road.—*Boston Transcript*.

A Railroad Advertising Trade-Mark.

The Chicago, Milwaukee & St. Paul Co. gives notice that it has adopted and duly registered as a trade-mark or design, for advertising purposes, an oblong block, set on an angle, with the name "Chicago, Milwaukee & St. Paul Railway" printed in white letters on a red ground. The design is not reproduced here, as its constant use by the company has doubtless made it familiar to all our readers.

A Worthy Improvement.

The improvement which has recently been made in the construction of railway stations in this part of the country has not received the public commendation it deserves. A number of the railroad companies that have their termini in this city have lately built stations along their lines that are decided ornaments to the towns in which they are located. Until recently, a country or suburban railroad station has been about the most disagreeable feature in the place in which it has been located. It has been architecturally ugly, thoroughly inconvenient, while the ground around it has been maintained in almost careful disorder. In this respect, American railroad stations have been in striking contrast with the railroad stations in Europe, which are ordinarily built with great taste, while the land in their immediate neighborhood is carefully laid out. The Boston & Albany, the Old Colony and one or two other companies seem to have considered it expedient to copy this European model, and where new stations are built these have been constructed in a manner which cannot be too much commended. The influence of a fine railroad station, with the ground around it tastefully laid out, cannot fail to have its effect on the people of the town in which it is situated. Insensibly, the buildings in the vicinity will be improved, so as to bring them up to the level of the model of good taste that has been set, and by this simple means an object lesson of the greatest value will be taught in many different localities. Even on the score of utility not a little can be said in favor of this new departure, for anything which tends to make travel by railroad easier and more attractive tends also to increase the patronage of the railroad companies.—*Boston Herald*.

Fast Time.

On Thursday, June 25, a special train consisting of a locomotive, 3 passenger cars and 1 drawing-room car made the run over the Albany & Susquehanna Division of the Delaware & Hudson River Canal Co.'s road, from Binghamton to Albany, 143 miles, in 3:10, making 4 stops and slowing up 6 times. Making no allowance for the stops, the average speed was 45.2 miles per hour. The train was drawn by engine No. 202, J. Malone, Engineer, an anthracite burner, with 19 by 24 in. cylinders and 5 ft. 8 in. driving wheels.

A New Kind of Passenger Traffic.

The East Indian Railroad Co. has been offered a special contract which it rather hesitates to accept, and is certainly in doubt as to whether it should be referred to the freight or the passenger department. The contract offered is for carrying 10,000 monkeys from Benares to Saharunpore. It appears that Benares is infested with a great multitude of monkeys, which are there considered sacred, and which have grown to be an intolerable nuisance. Several attempts have been made to carry them out of the city short distances, but they have always returned, and the authorities have now resolved to capture some 10,000 of them and carry them away a distance of about 350 miles, in the hope that they will stay away. Of course, on so large a shipment, they want special rates, while the company, on the other hand, thinks it should have extra payment for carrying so troublesome a cargo.

A Vermonter's Idea of Traveling.

"How far is Albany?" asked a countryman at the Grand Central Station.
"One hundred and forty-four miles."
"How long does it take to get there?"
"Three hours and twenty-five minutes by fast line."
"An' how much does it cost?"
"One dollar and forty-four cents."
"Gosh! a dollar an' forty-four cents for ridin' less'n four hours? Why, in Vermont I can ride half a day on a railroad for less money than that, an' not go near so fur, nuther."—*New York Sun*.

An Absent-Minded Passenger.

The passengers on the Middletown Express were much amused Thursday evening after the train left Goshen by the absent-mindedness of a well-known lawyer of Middletown. The conductor entered the car to take up the tickets, and when he accosted the gentleman referred to, he began searching through his pockets for his ticket, and failing to find it got up, looked on and under his seat and down the aisle of the car, and was about to pay his fare when conductor C. Hale, who had been greatly enjoying the fun, reached out his hand and removed the ticket from between the gentleman's thumb and finger, where he had been holding it in full view since entering the car at Goshen. The gentleman felt cheap, of course, but joined heartily in the laugh that followed.—*Port Jervis (N. Y.) Gazette*.

A Locomotive Struck by Lightning.

A singular accident recently happened at Milnes, Va., on the Shenandoah Valley road, when the locomotive of a freight train, which was standing on a siding, was struck by lightning. Both the engineer and fireman received severe shocks, the engineer being so injured that he did not recover for several days, and the engine was somewhat damaged. Accidents of this kind do not often happen.

An Alleged Pass Swindler.

The Union Pacific Co. states that applications for passes have been made to other lines, dated at "Train Dispatcher's office, Granger, Wyo.," and signed "J. M. Howard, Chief Train Dispatcher." This company does not maintain a train dispatcher's office at Granger, and the letters are believed to be written by one W. F. Meredith, for whom it has been ascertained that letter-heading has been printed. This Meredith is a young man, about 22 years of age, tall and slender, with light complexion and blue eyes, and left the company's service June 1. Persons receiving such requests for passes are asked not to honor them.

An Old Engineer.

On the Fourth of July Mr. James H. Prince will complete 40 years of service as a locomotive engineer on the Boston & Providence road. For nearly all the time Mr. Prince has been running local trains between Boston & Dedham. He

boasts that, although he has probably drawn more passengers than any engineer in New England, no life has ever been lost on one of his trains.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Marquette, Houghton & Ontonagon, annual meeting, at the office in Marquette, Mich., July 16, at noon.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Albany & Susquehanna (leased to Delaware & Hudson Canal Co.), $8\frac{1}{2}$ per cent., semi-annual, payable July 1.

Cheshire, $1\frac{1}{2}$ per cent., semi-annual, on the preferred stock, payable July 10.

Delaware, Lackawanna & Western, 2 per cent., quarterly, payable July 20. Transfer books close June 30.

Nauvatchuck, 5 per cent., semi-annual, payable July 15.

New London Northern, $1\frac{1}{2}$ per cent., quarterly, payable July 1.

New York, Lackawanna & Western (leased to Delaware, Lackawanna & Western), $1\frac{1}{2}$ per cent., quarterly, payable July 1.

New York Central & Hudson River, $0\frac{1}{2}$ per cent., quarterly, payable July 15, to stockholders of record on July 1.

Norwich & Worcester, 4 per cent., semi-annual, payable July 10.

Pittsburgh, Fort Wayne & Chicago (leased to Pennsylvania Co.), $1\frac{1}{2}$ per cent., quarterly, payable on special stock July 1, and on regular stock July 7.

Portland, Saco & Portsmouth (leased to Boston & Maine), 3 per cent., semi-annual, payable July 15.

Providence & Worcester, 3 per cent., semi-annual, payable July 1.

Rock Island & Peoria, $2\frac{1}{2}$ per cent., semi-annual, declared June 23.

United New Jersey (leased to Pennsylvania Railroad Co.), $2\frac{1}{2}$ per cent., quarterly, payable July 10.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *International Association of Traveling & Passenger Agents* will hold its annual convention in Boston, Tuesday, July 7.

The *Southern Railway & Steamship Association* will hold its annual convention in Atlanta, Ga., on Wednesday, July 8.

The *General Baggage Agents' Association* will hold its half-yearly meeting in St. Paul, Minn., on Wednesday, July 15.

The *Master Car-Painters' Association* will hold its annual convention in Toronto, Ont., on Wednesday, Sept. 2.

The *National Association of General Passenger & Ticket Agents* will hold its next half-yearly meeting in New York, at 11 a. m., on Tuesday, Sept. 15.

Foreclosure Sales.

The *Cincinnati Northern* road was sold under foreclosure in Cincinnati, June 27, and was bought for \$200,000, by A. S. Winslow, as agent for the bondholders. The sale did not include the interest owned by it in the Spring Grove, Avondale & Cincinnati road, and the purchasers incur no liability on account of that road. The line extends from Cincinnati, O., to Waynesville, 37 miles, and was for a time included by consolidation in the Toledo, Cincinnati & St. Louis, but this consolidation was set aside by the foreclosure of the mortgage. The purchasers will organize a new company as soon as the sale is confirmed.

ELECTIONS AND APPOINTMENTS.

Atlantic & North Carolina.—At the annual meeting of the stockholders in Morehead City, N. C., June 25, the following directors were chosen: J. A. Pridgen, John Gatling, Arnold Borden, Eugene Morehead. At the same time the following appointments of state directors by the Governor were announced: C. E. Foy, Washington Bryan, Winfield Chadwick, John F. Wooten, Dempsey Wood, W. H. H. Cobb, W. C. Stronach, Paul F. Faison.

On the following day the board met and elected Washington Bryan President; F. C. Roberts, Secretary and Treasurer; Henry R. Bryan, Attorney.

Car-Accountants' Association.—This Association at its recent convention elected the following officers: Frank M. Luce, President; A. P. Wilde, Vice-President; D. F. Maroney, Secretary; E. M. Horton, Treasurer.

Cattle King.—Mr. H. L. Jackson has been appointed Chief Engineer of this curiously named company. His office is at Dodge City, Kan.

Chester & Lenoir.—At the annual meeting in Chester, S. C., last week, President Hardin was re-elected with all the old directors. The road is leased to the Charlotte, Columbia & Augusta.

Chicago, Rock Island & Pacific.—Mr. E. St. John has been appointed Assistant to the General Manager, a new office. He will also retain his position as General Passenger Agent of the road.

Chicago & Western Indiana.—The board has elected John B. Carson President; N. J. Clark, Secretary and Auditor; J. D. Stokes, Treasurer.

Cincinnati, New Orleans & Texas Pacific.—Mr. R. X. Ryan is appointed Assistant General Freight and Passenger Agent, and the following changes of agents have been made in this department: The office of the Northwestern Agent, at Cleveland, and the traveling passenger agency for Tennessee are abolished. Mr. L. Hardy, heretofore General Freight Agent at Vicksburg, and Mr. Bernard Brown, General Agent at New Orleans, will hereafter be known as Contracting Agents at those points.

Mr. F. A. Zimmerman has been appointed General Baggage Agent in place of D. Ennis, resigned.

Mr. R. A. Lybrook has been appointed Master of Transportation of the Vicksburg, Shreveport & Pacific Division.

Cleveland & Canton.—The directors of this new company (successor to the Connotton Valley) have elected H. A. Blood President; D. K. Stevens, Secretary; W. O. Chapman, Treasurer; E. D. Hewens, Assistant Treasurer; Samuel Briggs, General Manager.

Covington & Macon.—Mr. L. F. Livingston, of Macon, Ga., is President of this new company.

Dakota & Great Southern.—The new officers of this road are J. M. Childs, of Utica, N. Y., President; M. B. Davis, Vice-President, and J. S. Wheeler, Secretary and Treasurer.

Herkimer, Newport & Poland.—At the annual meeting in Herkimer, N. Y., June 24, the old directors were re-elected, and chose the following officers: President, Edward M.

Burns; Vice-President, S. R. Millington; Treasurer, George H. Thomas; Secretary, Thomas E. Merritt.

Kansas & Gulf Short Line.—Mr. E. Culverhouse, General Manager, announced on June 21 that A. L. Clarke has been appointed General Freight and Passenger Agent for this company; appointment to date from July 1. Headquarters at Tyler, Texas. He succeeds Mr. E. B. Stevenson, appointed to other duties.

Marshall & Northwestern.—At the annual meeting in Marshall, Tex., June 25, the following Board of Directors were elected: Edward G. Tich, W. W. Heartsell, E. J. Fry, W. P. Hudgins, L. W. Lloyd, T. A. Elgin and A. C. Alexander. The directors chose E. G. Zeile, President; W. W. Heartsell, Vice-President; E. J. Fry, Treasurer; W. P. Hudgins, Secretary; L. W. Lloyd, Superintendent and Manager.

Missouri Pacific.—Mr. P. J. Conley has been appointed General Roadmaster of the Missouri, Kansas & Texas Division, with headquarters at Denison. Mr. L. Cody succeeds Mr. Conley as Roadmaster of the Iron Mountain Division.

Mr. J. G. Hartigan has been appointed Division Superintendent of the Texas Pacific Division, with office at Denison, Tex.

New York Central & Hudson River.—Mr. Erastus Corning, of Albany, has been chosen a director in place of James H. Rutter, deceased. Mr. Corning's father, the late Erastus Corning, was for many years President of the New York Central road before the consolidation with the Hudson River.

New York & New England.—Mr. W. H. Griggs, of Syracuse, N. Y., has been appointed Master Mechanic of this road and will assume the duties of his position July 1.

New York, Pennsylvania & Ohio.—Colonel A. M. Tucker has been appointed Division Superintendent, with office at Galion, O. He was recently on the Lake Shore road.

New York, Pittsburgh & Chicago.—The Court of Common Pleas of Beaver County, Pa., has appointed Mr. J. F. Mansfield Receiver of this road.

Northern Pacific.—Mr. S. G. Fulton has been appointed Assistant General Freight Agent, with office at Portland, Oregon, in place of A. D. Edgar, resigned. Mr. A. L. Stokes succeeds Mr. Fulton as General Agent at Helena, Mont.

Mr. B. P. Tilden has been appointed Engineer of the Jamestown & Northern Branch, with office at Jamestown, Dak.

Pennsylvania.—On July 1 this company reorganized its general freight department. Mr. John S. Wilson, heretofore General Freight Agent, is now known as General Freight Traffic Agent and will have charge of all matters pertaining to the company's freight traffic, under the direction of the Second Vice-President. He will be assisted by a local freight agent, a through freight agent and a coal agent. Mr. John Whittaker, heretofore Assistant General Freight Agent, has been appointed Local Freight Agent and will have charge of all local traffic and will also act for the General Traffic Agent in the absence of that officer. Mr. George B. Edwards, heretofore Eastern Manager of the Union Line, is appointed Through Freight Agent and will have special charge of all through freight business, with headquarters in New York. Mr. William Joyce, heretofore Division Agent on the Northern Central, is appointed Coal Freight Agent and will have charge of all the coal and coke business of the road, with headquarters in Philadelphia.

Philadelphia, Reading & Pottsville Telegraph Co.—This company has elected George deB. Keim, President; Howard Hancock, Secretary; John Welch, Treasurer.

Reading & Lebanon.—At the annual meeting in Philadelphia, June 16, the stockholders elected the following officers: William M. Kauffman, President; Charles McFadden, William G. Moore, John Shonour, Dr. James W. Deppen, Jacob Behney, John Donges, Joseph Coover, Adolphus Reineohel, directors.

Toledo, Cincinnati & St. Louis.—The Court has appointed Judge Livingstone Howland Receiver of this road, in place of W. J. Craig, resigned.

Toledo, Peoria & Western.—Mr. E. N. Armstrong has been appointed by the Receiver General Superintendent of this road. He was recently in charge of this road as Division Superintendent of the Wabash.

Union Pacific.—The President has appointed the following government directors for this company: Francis Kernan, of New York; E. P. Alexander, of Georgia; Edmond F. Noyes, of Ohio; Franklin McVeagh, of Illinois; J. W. Savage, of Nebraska.

Mr. J. H. McConnell has been appointed Master Mechanic of the Nebraska Division, with headquarters at Omaha. He was recently in charge of the shops at North Platte.

West Penn. & Shenango Connecting.—Mr. James I. Blair has been appointed Receiver of this road.

PERSONAL.

—Mr. B. M. Whitney, recently on the Chicago & Alton road, has been elected City Engineer of Kansas City.

—Mr. Frank Thomson, Vice-President of the Pennsylvania Railroad Co., sails for Europe on Saturday of this week for a two months' vacation.

—Mr. Henry A. Wise, recently Chief Engineer of the Missouri Valley Bridge Co. at Leavenworth, Kan., has been elected Assistant City Engineer of Kansas City.

—Mr. A. D. Edgar has resigned his position as Assistant General Freight Agent of the Northern Pacific road, on account of ill health, and will go to his old home in Texas.

—Mr. A. M. Tucker has resigned his position as Assistant Superintendent of the Michigan Division of the Lake Shore & Michigan Southern road, and will accept a position on the New York, Pennsylvania & Ohio road.

—Mr. H. W. Gays, who recently resigned his office as General Freight Agent of the Indianapolis & St. Louis road, has accepted a position with the Wiggins Ferry Co. and will take entire charge of the freight transfer business of that company between St. Louis and East St. Louis.

—The report that Mr. J. H. Hiland has resigned his position as arbitrator of the Chicago, St. Louis & Missouri River Association to accept a position on the Chicago & Alton road, is denied by the gentleman himself, who says that he has no intention of making any change at present.

—Mr. Stephen T. Gage, who has just been appointed Assistant to the President of the Southern Pacific Co., is a widely-known and popular man on the Pacific Coast. He has been with the company since 1871, and for several years past has filled the duties of the office to which he is now formally appointed.

—Mr. D. B. Robinson has tendered his resignation as General Manager of the Mexican Central Railroad. At the earnest request of the directors, however, Mr. Robinson has agreed to remain in charge of the road until the close of the

present year. His resignation has been tendered solely for the reason that his health will not permit of an extended residence in Mexico.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Six months to June 30:	1885.	1884.	Inc. or Dec.	P. c.
Lake Sh. & Mich.	\$6,421,071	\$7,230,364	D. \$799,293	11.1
Southern	1,832,593	2,779,074	D. 896,481	32.8
Net earnings	4,973,000	5,603,000	D. 630,000	11.2
Mich. Central	1,087,000	1,387,000	D. 300,000	21.6
Net earnings				
Five months to May 31:				
Norfolk & West.	\$1,045,263	\$1,062,634	D. \$17,371	1.7
Net earnings	388,639	401,496	D. 12,857	3.0
Northern Pacific	3,593,921	4,842,463	D. 1,248,542	25.1
Net earnings	1,355,893	2,224,510	D. 868,617	39.0
N. Y. & N. England	1,242,858	1,304,329	D. 61,471	4.7
Net earnings	357,147	225,767	I. 131,380	58.1
Ohio & Miss.	1,474,214	1,538,772	D. 64,558	4.2
Net earnings	312,820	142,771	I. 170,049	119.1
Phila. & Reading	10,281,909	12,069,900	D. 1,787,991	14.8
Net earnings	3,775,680	4,608,911	D. 833,231	18.1
West Jersey	399,745	415,134	D. 15,389	3.7
Net earnings	135,724	152,303	D. 16,479	10.8
Four months to April 30:				
Gal., Har. & San	\$912,126	\$949,525	D. \$37,409	3.9
Net earnings	392,590	292,963	I. 100,624	93.4
Louisiana West.	199,703	179,111	I. 20,592	11.5
Net earnings	105,734	77,295	I. 28,439	36.9
Morgan's La. & Tex.	1,309,490	1,191,410	I. 118,080	9.9
Net earnings	456,422	384,696	I. 71,726	18.6
Tex. & N. Orl's.	299,917	317,335	D. 17,418	5.5
Net earnings	123,500	134,333	D. 10,833	8.1
Month of April:				
Ches. & Ohio	\$290,001	\$296,367	D. \$6,366	2.1
Gal., H. & San.	238,047	278,971	D. 40,924	14.7
Aut.	58,050	48,182	I. 9,868	16.8
Louisiana West.	79,344	81,927	D. 2,583	3.3
Tex. & N. Orl's.				
Month of May:				
Norfolk & West.	\$192,827	\$202,436	D. \$9,609	4.8
Net earnings	57,878	75,300	D. 17,422	23.0
Northern Pacific	901,100	1,287,805	D. 386,705	30.0
Net earnings	438,155	615,226	D. 177,071	31.0
N. Y. & N. England	260,305	273,702	D. 13,397	4.9
Net earnings	63,098	51,635	I. 11,333	21.8
Ohio & Miss.	275,480	312,750	D. 37,270	11.9
Net earnings	63,414	56,444	I. 6,970	12.4
Phila. & Reading	2,377,423	2,827,041	D. 450,518	15.9
Net earnings	553,433	1,188,917	D. 235,484	19.4
West Jersey	96,068	102,969	D. 6,901	6.7
Net earnings	35,681	33,909	I. 1,752	5.2
Third week in June:				
Canadian Pac.	\$168,000	\$123,000	I. \$45,000	34.8
Chi. & Alton	151,930	176,947	D. 25,017	14.1
Chi. & East. Ill.	33,213	35,377	D. 2,164	6.2
Chi., Mil. & St. P.	421,000	424,811	D. 3,811	0.8
Chi. & Northw.	449,300	466,000	D. 16,700	3.6
Chi., St. P., Min. & Omaha	107,400	108,500	D. 1,100	1.0
Cin., Ind., St. L. & Chi.	40,003	44,462	D. 4,459	10.0
Illinois Central	196,745	200,349	D. 3,604	1.8
Iowa lines	36,405	37,897	D. 1,492	3.9
Long Island	77,890	80,585	D. 2,695	3.8
Louis. & Nash.	225,385	242,465	D. 17,080	7.1
Mil. & Northern	10,890	10,994	D. 104	1.0
Roch. & Pitts.	26,863	26,077	I. 786	2.0
St. L. & San Fran.	73,939	76,432	D. 2,493	3.3

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

Coal.

Coal tonnages for the week ending June 20 are reported as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Anthracite	657,459	127,038	I. 530,421	—
Eastern bituminous	161,954	191,005	D. 29,051	15.2
Coke	53,610	64,748	D. 11,138	17.1

On June 25 notice was given by the Schuylkill Coal Exchange that the Reading road's allotment for the month was filled and shipments must be stopped for the rest of the month. The other companies are in much the same condition. The anthracite agreement has been fairly well adhered to so far.

Actual tonnage passing over the Huntingdon & Broad Top road for the six months to June 27 was:

	1885.	1884.	Inc. or Dec.	P. c.
Broad Top coal	83,532	94,344	D. 10,812	11.5
Cumberland coal	220,123	218,502	I. 1,621	0.7

Total..... 303,655 312,846 D. 9,191 2.9

The Broad Top coal is mined on the line; the Cumberland is carried through for the Pennsylvania Railroad.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the six months to June 27 was:

	1885.	1884.	Inc. or Dec.	P. c.
Coal Port for shipment	33,112	34,109	D. 998	2.9
S. Amboy	83,532	94,344	D. 10,812	11.5
Local points on N. J. divs.	379,670	370,208	I. 9,462	2.6
Co's use	104,771	87,295	I. 17,476	20.0

Total..... 786,065 778,430 I. 7,635 1.0

Of the total this year 629,347 tons were from the Lehigh Region and 156,718 tons from the Wyoming Region.

Cumberland coal shipments for the six months to June 27 are reported by the Cumberland Civilian as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Baltimore & Ohio R. R.	949,611	954,898	D. 5,287	0.5
Bedford Div., Pa. R. R.	198,236	199,489	D. 1,253	0.6
Chesapeake & Ohio Canal	120,347	1,329,000	D. 12,743	9.6

Total..... 1,268,394 1,287,677 D. 19,283 1.5

Local deliveries are included in Baltimore & Ohio tonnage. Shipments from mines were this year: Cumberland & Pennsylvania Railroad, 826,975; George's Creek & Cumberland, 240,649; West Virginia Central & Pittsburgh, 204,100; total, 1,271,724 tons.

The coal tonnage of the Pennsylvania Railroad Division, Pennsylvania Railroad, for the six months to June 27 was:

	1885.	1884.	Inc. or Dec.	P. c.
Coal	5,208,474	4,915,125	I. 293,349	5.9
Coke	1,226,913	1,516,877	D. 289,964	19.1

Total..... 6,435,387 6,432,002 I. 3,385 0.1

This includes all tonnage passing over the road, whether originating on the line or received from other roads. It will be seen that the increase in coal was about equal to the decrease in coke, the total being nearly the same this year as last.

Southwestern Railway Association.

The Southwestern Railway Association met in Kansas City, Mo., June 24, the object being to readjust the rates and divisions on business coming to the road in the Association from the lines beyond Kansas City. The changes made have not been made public, but it is stated that they are not of great importance.

Colorado-Utah Association.

The notice of withdrawal from the Colorado-Utah Association given by the Chicago, Milwaukee & St. Paul Co. expired June 25. For some time past negotiations for a settlement of the difficulties have been in progress, and on that day notice was received that the St. Paul Co. would extend the time for 30 days, in order to allow the lines in the Association to confer and arrive at an amicable settlement if possible.

Joint Executive Committee Passenger Meeting.

The Joint Executive Committee, Passenger Department, met at the Commissioners' office in New York, June 26, Assistant Commissioner Pierson presiding. At the meeting the new passenger pool agreement was discussed and generally approved, but no final action was taken, the Committee adjourning until July 3, when it is expected that the details of the plan will be finally settled. A motion to advance rates was voted down, the feeling being against any change until after the adoption of the new agreement.

Petroleum.

The production and shipments of the Pennsylvania and New York oil wells in May are given as below by *Stowell's Petroleum Reporter*, in barrels of 42 gallons:

	1885.	1884.	Inc. or Dec.	P. c.
Production	1,771,371	2,232,403	D. 461,032	20.6
Shipments	2,067,099	1,899,329	I. 167,770	10.4
Stock, May 31	36,139,072	38,631,263	D. 2,492,191	6.4
Producing wells	22,233	21,434	I. 799	3.7

Of the total production the Allegheny District in New York furnished 12.9 per cent.; the Bradford District in Pennsylvania 41.3; the Warren District 12.0, and the Lower District 33.8 per cent. The production was greater than in January, February and March of this year, but was exceeded in every month of last year and of 1883, 1882 and 1881.

As for several months past, the shipments exceeded the production.

The stock on hand at the close of the month is considerably less than at the same time last year. It was diminished during the month by 325,728 barrels, being the excess of shipments over production.

During the month 213 new wells were finished and 32 dry holes were developed. There were 170 wells under the drill on May 31.

The shipments for the month were divided as follows:

	Crude.	Refined.	Total.	P. c.
New York	594,777	47,458	642,235	10.4
Philadelphia	337,308	13,643	350,951	16.5
Baltimore	171,640	1,338	172,978	8.3
Boston	30,112	42,996	73,108	3.0
Cleveland	289,721	—	289,721	13.8
Pittsburgh	80,589	—	80,589	2.8
Local points	470,232	33,294	503,526	24.2
Refined at Creek refineries	137,729	—	137,729	—
Total	2,097,099	137,729	2,234,828	100.0

In this statement the shipments of refined are of the oil refined at the Creek refineries. This oil is reduced to its equivalent in crude, so that the total represents the amount of oil from the wells going to each point named, whether shipped in crude or in refined form.

Cotton.

Cotton movement for the week ending June 26 is reported as follows, in bales:

	1885.	1884.	Inc. or Dec.	P. c.
Interior markets:				
Receipts	2,804	3,300	D. 496	15.0
Shipments	6,775	9,087	D. 2,312	30.0
Stock, June 26	35,972	39,547	D. 3,575	8.8
Exports:				
Receipts	2,155	5,642	D. 3,487	62.2
Exports	32,786	17,764	I. 15,022	84.4
Stock, June 26	320,921	343,235	D. 22,314	9.2

The total movement from plantations for the cotton year (from Sept. 1) to June 26 is estimated at 5,582,127 bales; the decrease, as compared with last year, is 33,005 bales, the decrease from 1882-83 is 1,301,262 bales, and the increase over 1881-82 is 291,315 bales.

Trunk Line Meeting.

The trunk line managers met in New York June 30, and after a very brief session agreed to extend the West-bound freight pool to Aug. 1. All the roads were represented. Nothing was done in the way of advancing or restoring rates.

A Texas Pool.

It is stated that a pooling agreement has been concluded by the Missouri Pacific, the Southern Pacific, the Gulf, Colorado & Santa Fé and the Houston & Texas Central for the pooling and division of Texas traffic, and it is expected that the minor roads in Texas will also unite with the pool. The details of the agreement have not been made public, but it is understood that the division of traffic will be made by arbitration and that the commissioner or executive committee will establish rates and make monthly settlements.

California Through Freights.

Shipments of through freight from California points in April are reported as follows:

	Tons.	P. c.
Northern route (Central Pacific)	6,505	54
Southern route (Southern Pacific)	5,546	46
Total	12,051	100

The shipments were about 2,000 tons less than in March. Leading items were 2,708 tons sugar, 970 tons tea, 619 tons wine and 2,413 tons oranges.

Buffalo Grain Traffic.

Buffalo grain receipts by lake to June 30 for four years past were as below, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1885.	1884.	1883.	1882.
Flour	497,914	494,823	579,844	552,851
Grain	14,283,958	12,128,104	18,867,014	15,439,203
Total, bushels	16,773,528	14,602,219	21,766,234	18,303,458

Shipments eastward of grain received by lake for the same period were, in bushels:

	1885.	1884.	1883.	1882.
By canal	8,662,344	8,132,846	12,490,885	9,128,707
By rail	4,552,134	2,800,015	4,141,476	3,670,119

Total..... 13,214,478 10,932,861 16,632,361 12,798,826

Per cent. by rail..... 34.4 25.6 24.9 28.7

The canal opened May 11 this year, May 7 last year and in 1883, and May 7 in 1882, the dates of opening being thus nearly uniform.

Missouri Freight Agents' Meeting.

A meeting of general freight agents of Missouri roads was held in Jefferson City, on the call of the Railroad Commissioners, all the principal lines being represented. The object of the meeting was to consult with the Railroad Commission on freight classification and tariff rates in the state. The meeting organized by electing Commissioner Frank chairman and H. H. Gregg secretary. After some discussion

it was decided to adjourn until after July 24, when another meeting will be held in St. Louis.

RAILROAD LAW.

Damages by Fire—Insurance.

In the case of Cunningham against the Evansville & Terre Haute Co., the Indiana Supreme Court holds as follows:

In an action for property destroyed by fire where it is claimed that plaintiff's property was consumed and destroyed by defendant's actionable negligence, it is no defense that plaintiff's property was insured for its full value, and he has received the insurance money. In such case the plaintiff is entitled to recover his entire loss from the defendant; and the fact that the insurance companies in which the property was insured had paid them the amount of such insurance can not constitute any defense. Nor can the payment of insurance money be used in mitigation of damages against the wrongdoer. The insurance is something with which the wrongdoer has nothing to do, and whether received by the plaintiff or not is no concern of such wrongdoer, nor can he have any benefit from it.

Loss of Property in Transit—Insurance.

The case of the Jackson Co. against the Boylston Mutual Insurance Co., in the Massachusetts Supreme Court, was an action to recover upon a policy of insurance, by which the defendant insured the plaintiff on cotton in transit between ports and places in the United States and plaintiff's mills in New Hampshire. The cotton was bought by a person named Ivy, as broker for the plaintiff, and shipped by him by the Atlanta & West Point Railroad and connecting lines. It was in two lots, and Ivy, attaching the two railroad receipts to a draft, drew on the plaintiff for the amount of the purchases. The draft, with the railroad receipts attached, was received by the plaintiff's treasurer, Oct. 17, 1883, and paid on presentation, after which he gave notice to the defendant of the shipments and presented the policy that they might be indorsed thereon, which was done. The railroad receipts contained a stipulation that in case of loss or damage to the cotton sustained during transportation, whereby legal liability was incurred, only that company should be responsible in whose actual custody the cotton was at the time of the occurrence; and further that the company incurring such liability shall have the benefit of any insurance which may have been effected on the cotton. The railroad receipts were not sent to the defendant nor their contents communicated, nor did it ask to see them. The plaintiff's treasurer did not know that they contained the clause, nor did they know that receipts containing such a clause would be likely to be taken, and no fraud or concealment from the defendant was intended. While in transit and in actual custody of the South Carolina Railroad, a common carrier and one of the connecting lines of the Atlanta & West Point Railroad, in the state of South Carolina, 36 bales of the cotton were destroyed by fire. For the value of these this action was brought. The case was heard by a single justice, who held the defendant liable and found for the plaintiff. The defendant contended that the policy was rendered void because the plaintiff made a contract with the carrier by which the defendant was deprived of the right of subrogation, and its risk was largely increased without its knowledge or consent. The case was reported to this Court, which has now given judgment on the verdict for the plaintiff, for the reason that "the plaintiff company might properly so contract with the carrier that the insurance effected by him would be for the benefit of the carrier."

OLD AND NEW ROADS.

Atlantic & Pacific.—The annual report for 1884 shows earnings, \$1,086,863; expenses, \$1,159,013; deficit, \$127,850. Expenditures on construction account were \$488,585. Interest payments were met from land sales and advances by allied lines.

Augusta, Gibson & Sandersville.—Track on this road is now laid to Bath, Ga., 20 miles southwest from the starting point at Augusta, and trains are running regularly to the new terminus. The road is graded for 37 miles beyond Bath, and track laying is in progress. The entire length of the line from Augusta to Sandersville will be 78 miles.

Baltimore & Ohio.—The bill authorizing the construction of this company's lines into the city of Philadelphia, as reported by the committee, was passed by the Select Council at a meeting held June 24. Some slight amendments were made. An amendment making a condition of the grant that the company's rates on through freight to Philadelphia should always be less than those to New York by the amount of the local rates between the two cities, was voted down. A letter from Vice-President King was presented to the Council showing that if this condition is enforced the company would, under conditions now existing, be compelled to carry freight from Chicago to Philadelphia for 1½ cents per 100 lbs.

The ordinance was passed without amendment by the Select Council on June 29, and there is now no further legal obstacle to the construction of the road, except the consent of the Port Wardens to the building of the bridge over the Schuylkill. The plans for the bridge are now under discussion by that board.

The Philadelphia Ledger of July 1 says: "A vast amount of work is being done on the Baltimore & Ohio Railroad line outside of the city, and much of the grading is still to be done. Between Chester and Wilmington some sections have been graded, while work on others has scarcely been begun. The line is evidently being built for fast service. Important roads are crossed above or below grade, sometimes at considerable sacrifice of levels, and the road is made as nearly direct as

about 150 in all, and some of them of considerable size, and this bridge work will be the most expensive part of the line.

Central of New Jersey.—The interest due July 1 on the consolidated bonds and the American Dock & Improvement Co. loan was not paid. It was supposed at one time that the Reading receivers had made arrangements with bankers to pay the coupons of the dock loan at any rate, but the arrangement fell through, the receivers being unable to guarantee any time when the loan would be repaid. The directors of the Central protested against the purchase of any coupons. It is announced that the directors have instructed their counsel to begin proceedings for the recovery of the road on account of the failure of the lessee to fulfill its obligation, and, it is stated, the complaint will be filed in the United States Court next week.

Chesapeake & Ohio Canal.—The Maryland Supreme Court has denied the petition of certain bondholders for a foreclosure and the appointment of a receiver. The Court also denied the petition of the directors for leave to use certain bonds for the purpose of enlarging the canal locks, holding the question not properly before it.

Chester & Lenoir.—At the recent annual meeting a proposition was presented to transfer the lease of the section of the road from Newton, N. C., to Lenoir, 30 miles, to the Western North Carolina Co. The entire line is at present leased to the Charlotte, Columbia & Augusta Co. The stockholders passed a resolution referring the matter to the board of directors, with power to act.

Cincinnati, Hamilton & Dayton.—The appeal from the decision of the United States Circuit Court, remanding the Jewett suits to the State Court, has been withdrawn, and the case will go back to that court for trial on its merits.

Dakota & Great Southern.—This company has been reorganized, and, it is stated, that a number of Eastern men have taken an interest in the stock and are making arrangements to begin work on the projected road.

Eureka & Eel River.—This road is now completed from Eureka, Cal., southeast to Eel River, a distance of 26 miles. The road is of standard gauge and has been built entirely by local subscriptions and a county bonus. It has cost about \$500,000, and is intended to give the farming and lumber interests an outlet to the sea at Eureka.

Fremont, Elkhorn & Missouri Valley.—The Sioux City (Iowa) Journal says: "Now and then even a careful and conservative newspaper reporter gets off his base. Such was the case when the item was made the other day that the Elkhorn line had let the contract for 125 miles of grading from White River west to C. P. Treat. This item has been extensively stolen, but it was off both as to direction and distance. It is 100 miles of grading and that been let to Mr. Treat, and the line is not west into Wyoming, but north from White River into Dakota. The contract will take the end of the grade to a point about 80 miles north of Rapid City. The line does not run through Rapid City, but about three miles to one side, just far enough to kill the town if the line is built as surveyed. Of that 100 miles of grade 45 miles at least is to be ironed this season. The grade does not have to be finished this season, and it is doubtful if it can be, as the work averages 36,000 cubic feet to the mile, fully twice the average of common prairie work. This move will place Black Hills points within less than 24 hours of travel to a railroad outlet before the end of the season. Work on the new contract is to be commenced as soon as the engineers can cross section enough to start on. No sub-contracts have yet been let."

Grand Trunk.—This company, it is stated, is having surveys made for a tunnel under the Detroit River from Sarnia to Port Huron. The crossing at that point has been under discussion for a long time. A tunnel has been proposed, and soundings were made some years ago to ascertain the nature of the river bottom, but nothing further was done and the ferry transfer continues in use. A bridge over the river at that point is considered out of the question on account of the interruption to navigation, although its construction is perfectly practicable.

Indiana, Alabama & Texas.—Track is now laid on this road to a point 20 miles northward from Clarksville, Tenn., an extension of 10 miles this year. A further section of 10 miles is all graded and track laying will soon be begun upon it, and contracts have been let for the grading of the fourth section of 10 miles.

Jacksonville, Tampa & Key West.—Work has been resumed on the construction of this road between Palatka, Fla., and Sanford. The road has been for some time in operation from Jacksonville to Palatka, 56 miles, and the extension will be 69 miles long. Nearly all the grading on this is now finished, as well as the draw-bridge over the St. John River at Buffalo Bluff. Contracts have been let for the remaining work and arrangements made for the rails and ties, and the company hopes to have trains running to Sanford by January next. The company recently bought two of the locomotives on exhibition at New Orleans and has now on the road 1 Pittsburgh and 6 Baldwin locomotives; 8 passenger, 2 parlor, 3 combination and 4 baggage cars; 30 box and 30 flat cars.

As soon as the main line to Sanford is finished the company expects to begin the construction of several branches; one 2 miles long to Crescent City, one 5 miles long to Volusia and one of 40 miles from Seville to Daytona, on the Halifax River. The last named branch, it is expected, will ultimately be extended to Titusville, some 50 miles beyond Daytona.

Kansas City Belt.—This road, which has recently been completed, is 6 miles long, extending around the outskirts of Kansas City, Mo., and connecting the roads entering that city from the east and from the west. It is owned jointly by the several lines with which it connects, and has been built for the purpose of transferring freight without the necessity of hauling cars through the city.

Kansas City, Clinton & Springfield.—The track on this road is now laid from the junction with the old road at Raymore, Mo., southeast 44 miles to a point within 5 miles of Clinton, and it was expected that Clinton would be reached during the present week. The grading and bridging on the 79 miles between Clinton and Ash Grove are now well advanced. The road is owned by the Kansas City, Ft. Scott & Gulf, and will make a short cut for that company's line between Ft. Scott and Memphis.

Lake Shore & Michigan Southern.—This company makes the following statement for the half year to June 30, the June earnings estimated:

	1885.	1884.	Inc. or Dec.	P. c.
Earnings	\$6,421,071	\$7,220,364	D. \$779,293	11.1
Expenses	4,588,478	4,491,290	I. 97,188	2.2
Net earnings	\$1,832,593	\$2,729,074	D. \$896,481	32.8
Charges	1,918,199	1,890,334	I. 27,865	3.2
Surplus or deficit ..	Def. \$85,606	Sur. \$838,740	D. \$924,346	....

Expenses, which include taxes, were 71.5 per cent. of gross earnings this year, against 62.2 per cent. last year. The charges include interest, rentals and dividends on guaranteed stock.

Manitoba & Northwestern.—This company has closed a contract with D. C. Shepard & Co., of St. Paul, Minn., to build 50 miles of road from Minnedosa, Man., northwest, to be completed this season, and also to build a second section of 50 miles to be finished next year.

Marshall & Northwestern.—The track of this road is now completed to Hayward, Tex., 10 miles northwest from the starting point at Marshall, and regular trains have been put on this section. Work is progressing on the grading for 20 miles further and tracklaying will soon be resumed.

Mexican Central.—Holders of the securities of this company have been much excited over the dispatches received from Mexico to the effect that the payment of the government subsidy to the company out of custom receipts will be suspended. These subsidy receipts have formed a considerable portion of the income of the company, and it has relied upon them for meeting its interest payments. Apparently there is no way for enforcing the payment against the Mexican government, and what action the company will take in the matter is uncertain.

Michigan Central.—This company makes the following statement for the six months to June 30; June estimated:

	1885.	1884.	Inc. or Dec.	P. c.
Earnings	\$4,073,000	\$5,605,000	D. \$1,532,000	11.2
Expenses	3,880,000	4,216,000	D. 336,000	7.8
Net earnings	\$1,087,000	\$1,387,000	D. \$300,000	21.6
Charges	1,320,000	1,780,000	I. 460,000	3.1
Surp. or def. ..	Def. \$233,000	Sur. \$107,000	D. \$340,000	....

Taxes are included in expenses. The charges include all interest and rentals of leased lines.

Minnesota & Northwestern.—This company is making extensive improvements on its property in West St. Paul, where a large force is at work grading for the yard and depot grounds. The track is now laid to Dodge Centre, Minn., 77 miles south from St. Paul and 45 miles beyond the recent terminus at Cascade. There remain about 34 miles of track to be laid to reach the southern terminus at Lyle on the Iowa line. All of this is graded and tracklaying is advancing rapidly, so that the company expects to have the iron all laid in July and to open the road for business about Aug. 1. Arrangements have been made for the use of the tracks between St. Paul and Minneapolis and of depot facilities in the last named city.

Mobile & Ohio.—This company has issued the following instructions relative to changing its gauge:

"On Wednesday, July 8, 1885, the gauge of the track will be changed from 5 ft. to 4 ft. 8½ in.

"Agents and train dispatchers will see that all foreign cars are sent home not later than Monday, July 6, except such as are on Mobile & Ohio trucks.

All Mobile & Ohio cars, and foreign cars on Mobile & Ohio trucks, will be run to shops at Whistler, Macon or Jackson previous to change of gauge.

"Agents will receive no perishable freight, nor will they load freight of any kind later than for No. 7 leaving Mobile on the 5th, and No. 8 leaving Columbus, Ky., on the 5th, until after change of gauge. Agents will be held responsible for any cars remaining at their stations after passage of these trains, unless same have been previously reported. All freight must be unloaded by July 6. * * *

"All branch trains will be abandoned on the 7th and resumed on the 10th, and engines and cars from branches will be sent to shops on the 7th.

"All freight trains must be off main line by 3:20 a. m. on July 8, and section forces will work regardless of them after 3:30 a. m. on that day.

"All trains due to leave Mobile and East Cairo after 9 p. m. July 8, will be run, but no train which is the first to leave on its schedule after change of gauge must do so without telegraphic orders.

"A train for No. 2 leaving Cairo on the 9th, and an engine and caboose for No. 8 leaving East Cairo on the 8th, will be sent to East Cairo over Illinois Central road previous to change. * * *

"Train dispatchers will distribute engines and cars immediately after change as may be necessary."

The portions of the order omitted relate only to the movement of certain trains on the day of the change and the preceding day.

New York Central & Hudson River.—It has been generally expected that this company would pass its July dividends entirely, but on July 1 it was announced that the directors had resolved to declare a dividend of ¼ of 1 per cent., payable at the usual time. No financial statement was made.

It is said that the company will build a branch from Amsterdam, N. Y., to Saratoga Springs, to accommodate travel from the West to that Summer resort.

New York & New England.—At a meeting of the car trust certificate holders in Boston last week, the managers who have opposed the settlement with the New York & New England Co. were dropped, and new managers chosen who are in favor of that settlement.

The Receiver gives notice that arrangements have been made with friends of the company who will purchase at par the coupons due July 1 on the first mortgage bonds, on presentation at the Continental National Bank in Boston.

The Receiver's statements give the following figures for May and the eight months of the fiscal year from Oct. 1 to May 31:

	1885.	1884.	Eight months.	1885.	1884.
Earnings	\$2,377,423	\$2,827,941	\$2,043,319	\$2,195,722	
Expenses	1,423,990	1,639,024	1,460,901	1,941,086	
Net earnings	\$853,433	\$1,188,917	\$582,418	\$254,636	

For the eight months the gross earnings decreased \$452,403, or 6.9 per cent., and the expenses \$480,185, or 24.8 per cent., the result being a gain of \$327,782, or 128.7 per cent., in net earnings.

New York, Pittsburgh & Chicago.—A receiver has been appointed for this road on application of a creditor of the company, who claims a small amount due him for services. The road is now in operation from New Galilee, Pa., to Rogersville, 15 miles, and the company has been trying to make arrangements to raise money for its extension to New Lisbon and Marion, O.

New York, West Shore & Buffalo.—In Newburg, N. Y., June 30, counsel for the United States Trust Co. trustee under the first mortgage, made application to the Supreme Court for an order to appoint a time for the trial of the foreclosure suit. After hearing arguments on both sides the Court made an order fixing the time for trial at July 18. It is understood that the trustee intends to push the suit and that the final trial will commence at that time.

General Passenger Agent Monett states that the relations of this road with the Pennsylvania Railroad continue most friendly. Relative to the withdrawal from the latter's Jersey City terminus, he says that it has always been a part of the plan of the West Shore to establish a down-town station in New York City. Owing to certain complications the franchise and facilities for operating a ferry were not secured

until late this spring. As soon as the arrangements were completed, notice was given by the West Shore to the Pennsylvania that after June 21 it would cease to use the Pennsylvania terminus at Jersey City for its passenger business, and thereafter the entire business of the company to and from New York would be transacted through the Weehawken terminus and at its stations in New York at Forty-second and Jay streets. The advantage is that the West Shore is relieved of the expense of a double terminus. Parlor cars are still run through between Long Branch, Washington, Baltimore, Philadelphia and Saratoga, and the Pennsylvania Railroad is rendering every assistance necessary to promote the interchange of business between the two roads. Through passengers, other than those accommodated in parlor cars, are transferred with their baggage by annex boats between the large terminal station of the West Shore at Weehawken and the Jersey City station of the Pennsylvania Railroad.

Norfolk & Western.—This company's statement for May and the five months to May 31 is as follows:

	1885.	1884.	Five months.	1885.	1884.
Gross earnings ..	\$192,827	\$202,436	\$1,045,263	\$1,062,634	
Expenses	134,949	127,136	656,624	661,138	
Net earnings ..	\$57,878	\$75,300	\$388,639	\$401,496	
Per cent of exps.	70	63	63	62	

For the five months the gross earnings decreased \$17,371, or 1.7 per cent., and the expenses \$4,514, or 0.6 per cent., the result being a decrease of \$12,857, or 23 per cent., in net earnings.

Northern Pacific.—The gross and net earnings for eleven months of the fiscal year are as below; in net earnings as shown, rentals and taxes have not been deducted:

	1884-85.	1883-84.	1884-85.	1883-84.
July 1 to Dec. 31..	\$6,617,719	\$6,617,989	\$3,359,569	\$2,920,645
January	553,582	614,102	113,008	164,809
February	569,964	520,085	168,000	91,282
March	691,612	978,656	237,138	488,846
April	877,665	1,441,515	399,583	843,347
May	901,100	1,287,805	438,153	635,226

Total 11 mos. \$10,221,642 \$11,460,452 \$4,715,462 \$5,145,155

The decrease in gross earnings for the eleven months was \$1,238,810, or 10.8 per cent.; in net earnings, \$420,693, or 8.2 per cent.

From July 1 to June 1 in 1884-5 land sales were 295,455 acres for \$1,471,655, including town lots.

Ohio Central.—The purchasing committee which bought the main line at the recent foreclosure sale has filed the articles of organization of the Toledo & Ohio Central Railroad Co., and also filed articles of agreement transferring the road to that company. It is understood that the agreement under which a majority of the stock is to be transferred to the Columbus, Hocking Valley & Toledo Co. has been approved by nearly all the stockholders, and that it will be carried out as soon as the necessary formalities are completed. The Hocking Valley Co. will take possession of and operate the road.

Ohio & Mississippi.—This company's statement for May and the five months to May 31 is as follows:

	1885.	1884.	Five months.	1885.	1884.
Earnings	\$275,480	\$312,756	\$1,474,214	\$1,538,772	
Expenses	212,066	256,312	1,161,394	1,396,001	
Net earnings ..	\$63,414	\$56,444	\$312,820	\$142,771	

For the five months the gross earnings decreased \$44,558, or 4.2 per cent., and the expenses \$234,607, or 16.8 per cent., the result being a gain of \$170,049, or 119.1 per cent., in net earnings.

Old Colony.—A survey is in progress for a branch from this road at Tiverton, R. I., through Little Compton to Seacomet Point. The distance is about 13 miles.

The company has just finished at its shops several handsome parlor or chair cars which are to run between Boston and Wood's Holl, for the accommodation of summer travelers to Cape Cod, Nantucket and Martha's Vineyard.

Oregon & California.—The Commissioner of the General Land Office has declined to grant the request of this company for the issue of patents on 325,000 acres of land already selected, and to allow selections to be made for 1,000,000 acres more. The reason given by the Commissioner is, that the company's grant expired in 1880, and that the bill to forfeit the grant was before Congress at the last session. He therefore holds that until the question of enforcing the forfeiture has been decided by Congress he has no right to take any action in the matter.

Pennsylvania.—At the special meeting held June 30, the stockholders voted to assent to the proposition of the company to reduce the amount annually devoted to the trust fund for the purchase of the company's guaranteed securities, from \$600,000 to 1 per cent. of the net earnings, or (based on last year's report) \$86,000. The accumulated interest of the fund will be still devoted to these purchases, this now being upward of \$800,000 annually, the trust holding securities that have cost about \$4,500,000.

Philadelphia & Reading.—The Receiver's statements give the following figures for the earnings of the railroad for May and the six months of the fiscal year from Dec. 1 to May 31:

	1885.	1884.	Six months.	1885.	1884.
Earnings	\$2,377,423	\$2,827,941	\$12,597,472	\$14,367,543	
Expenses	1,423,990	1,639,024	7,900,780	8,873,075	
Net earnings ..	\$953,433	\$1,188,917	\$4,696,692	\$5,494,468	

This shows for the half year a decrease in gross earnings of \$1,770,071, or 12.3 per cent.; a decrease in expenses of \$978,295, or 10.9 per cent., and a resulting decrease in net earnings of \$797,776, or 14.5 per cent.

The traffic reported is as follows:

	1885.	1884.	Six months.	1885.	1884.
Passengers	1,985,564	2,427,133	10,501,669	11,467,319	
Tons merchandise ..	721,621	800,697	3,889,521	4,427,319	
Tons coal	1,021,873	1,049,369	5,163,379	5,165,380	
Tons coal on colliers ..	45,085	48,974	263,521	260,190	

The statement for the Philadelphia & Reading Coal & Iron Co. is as follows:

	1885.	1884.	Six months.	1885.	1884.
Earnings	\$1,207,175	\$1,882,310	\$6,390,844	\$7,081,017	
Expenses	1,205,691	2,007,332	6,518,891	7,503,094	
Net or deficit N. \$1,484	D. \$125,113	D. \$128,047	D. \$422,077		

For the half-year the receipts decreased \$690,173, or 9.8 per cent., and the expenses \$884,203, or 13.1 per cent., the result being the lessening of the deficit by \$294,030, or 69.7 per cent.

The coal mined from the company's lands was as follows:

	1885.	1884.	Six months.	1885.	1884.
By Coal & Iron Co. ..	426,397	424,488	2,071,875	1,956,390	
By tenants	60,618	58,632	336,372	357,297	
Total	487,015	483,140	2,408,247	2,313,687	

The coal mined shows a small increase both for the month and for the half-year.

The joint net earnings of the two companies were:

	May.	Six months.
	1885.	1884.
Railroad Co.....	\$953,433	\$1,188,917
Coal & Iron Co....	1,484	*125,113
		\$4,093,692
		\$5,494,468
Total.....	\$954,917	\$1,063,804
		\$4,568,045
		\$5,072,391

* Deficit.

Decrease for the month \$108,887 or 10.2 per cent.; for the half-year, \$503,746, or 9.9 per cent. As the expenses of both companies exclude all charges for interest or rentals, the net earnings are the amounts from which those charges are to be met.

The report of George M. Dallas, master under the receivership giving his audit of the accounts for May, was filed in court June 29. The railroad company had \$26,108 in its treasury on May 1; there was received during the month \$2,243,945, and the balance on hand May 31 was \$39,176. The balance in the treasury of the coal company on May 1 was \$9,301. The receipts during the month were \$938,958, and the balance at the close of the month \$7,047.

A dispatch from Philadelphia, July 1, says: "At the office of this company to-day the only interest that was being paid was on the first-mortgage bonds of the company, on the general-mortgage scrip, and on the Perkiomen mortgage scrip. The treasurer stated that the rental of leased lines falling due during the month would be paid, and the sending of \$12,000 per day to New York to meet the New Jersey Central interest payments would be continued. At that rate it will take until Aug. 10 to pay the July interest on the New Jersey Central securities, which amount in all to \$468,500. Nor does this include the dividends due and overdue, and which the New Jersey Central directors have demanded, under threat of annulling the lease. There is no possibility of the dividends being paid, and a conference will be held to-morrow to consider what course to pursue. Already the petition asking that the lease be cancelled has been prepared, and unless something unforeseen should happen in the meantime, it will be presented to the Court on Tuesday next."

Pittsburgh & Lake Erie.—In the Court of Common Pleas in Pittsburgh, July 1, Judge Ewing handed down an opinion in the case of B. J. McGrann, of Lancaster, Pa., the contractor for the building of this road. McGrann claimed that the company was indebted to him in \$600,000 for extra work done by order of the Chief Engineer. When the case came up for trial a peremptory non-suit was ordered, but subsequently a motion to remove the non-suit was made and argued. In the decision Judge Ewing refused the motion.

Pittsburgh, McKeesport & Youghiogheny.—This company will soon begin an extension of its line from Broadford, Pa., to Mt. Pleasant in the Connellsville coke district, the object being to secure an increased share of the coke traffic. The new road will be parallel to two other lines, one owned by the Baltimore & Ohio, and one by the Pennsylvania Railroad, and it will require some costly work to avoid crossing the tracks of those roads at grade. From Broadford to Scottsdale the new road will be to the west of both the other lines. At Scottsdale it will cross the Pennsylvania track and run between that and the Baltimore & Ohio to Iron Bridge, 3 miles, where it will again cross the Pennsylvania and run west of both lines nearly to Mt. Pleasant, where it will probably have to cross the tracks of both roads again. The surveys are nearly completed.

Port Jervis & Monticello.—This short road has been for some time past indulging in the apparently unnecessary luxury of two receivers, each appointed by a justice of the Supreme Court. Mr. De Feyster, who was appointed by Judge Dykman, has been in possession of the property, but at Newburgh last week an order was made by the court vacating the order of Judge Dykman and confirming the appointment of Mr. W. H. Clark, who had previously been appointed receiver by Judge Brown. Mr. Clark took formal possession and issued the necessary orders. It is probable, however, that an appeal will be taken from the order appointing him and that there will be further litigation in the matter. Mr. De Feyster, who is President of the company, represents the stockholders, while Mr. Clark represents the interest of the judgment creditors.

Portland & Ogdensburg.—A bill to authorize and provide for the reorganization of this company has been introduced in the New Hampshire Legislature. It provides for the organization of a new company by the bondholders, and renews the authority to build a line from Fabyan to Scott's Mills, where the Boston, Concord & Montreal track is now used.

Providence & Worcester.—This company recently applied to the Railroad Commissioners for leave to run passenger trains over the Boston & Albany tracks at the Viaduct crossing in Worcester, Mass., in order to make more direct connection with the Worcester, Nashua & Rochester for its White Mountains trains. The crossing is already used for freight trains, but the Boston & Albany objected to the running of passenger trains for the reason that, under the law, it would then be obliged to stop all its trains there. The Commissioners heard arguments, and then decided to refuse the application on the ground that they had no authority in the case. For two days the Providence & Worcester ran its trains over the crossing, but was then stopped by an injunction.

Rochester & Pittsburgh.—The Attorney-General of New York has denied the application of certain stockholders requesting him to bring suit against the company and some of its directors for an accounting and for the dissolution of the company.

St. Joseph Valley.—The contract for building the extensions of this road from Buchanan, Mich., to South Bend, Ind., 15 miles, and from Berrien Springs, Mich., to Benton Harbor, 20 miles, has been let to Samuel R. Mink, of Baltimore, who is to begin work at once.

Sheffield & Birmingham.—A contract has been let to a Mr. Harvey, of New York, to build this road from Sheffield, Ala., to Birmingham, 130 miles. The contract provides that 45 miles from Sheffield must be completed within a year.

Stewartstown.—This road is now about completed and will be open for traffic July 1. It is 7 miles long, extending from Stewartstown in York County, Pa., east to New Freedom on the Northern Central Railroad, and will be operated as a branch of that road. It has been built entirely by the local owners of property, with a view of securing a convenient outlet. The stock of the company, which amounts to \$60,000, is held by 250 subscribers, and they have built the road without any expectation of profit, except such as may be derived from the additional value of their property. It has been decided that the net earnings are to be applied to improving the road until it is placed in first-class condition.

Texas & St. Louis.—In the United States Circuit Court in St. Louis, June 25, a decision was given on the application

of the company for leave to file an answer to the bill in foreclosure. The Court denied the application, saying that the original bill in this case was filed Jan. 12, 1884, when an interlocutory decree was ordered, reciting that the defendant company assented to the proceedings and appointing a receiver for the property. Under that decree and appointment the Court had hitherto proceeded, passing on intervening claims and authorizing the issue of receivers' certificates for the preservation of the property. The Court has also repeatedly intimated to all parties concerned that the foreclosure proceedings must be brought speedily to a close and, if necessary, the property sold and all interests connected with it finally adjusted. The defendant company then asked leave to file an answer, and the Court made a decision with respect to that application on June 1, but the terms of that decision were not complied with. In the present petition no reason is given why the defendant company, after the lapse of nearly a year and a half, should seek to disturb all that has been done under its expressed assent. Nor does the company state that it is ready to provide for the defaulted interest or for the expenditures made by the receiver. The Court consequently holds, that to grant the present petition could only cause useless delay, to the injury of all concerned. The administration of the road by the Receiver has not, and is not likely to produce sufficient means to meet past and accruing defaults. If the receiver's plan is to be continued some party to the litigation should become responsible, and it is evident that the company is not in condition to do so. The sale of the road in Texas has already been ordered, and it is for the interest of all concerned that the sale of the road in Missouri and Arkansas should take place at the same time. With the suggestions made in the complaint of disagreements among the stockholders the Court had nothing to do, and it is now too late to ask that all the previous actions of the Court should be reversed and the controversy prolonged.

The Court also denies the application made by Robert Bagnell, an individual stockholder, to file an answer on his own account, the ground of its refusal being substantially the same as those stated above.

The Court then, on application of the trustee under the general mortgage, stated that it was ready to grant the decree of foreclosure and sale, and directed that the trustee go before the Master and submit the proofs of its case.

Texas Trunk.—A meeting of the board was held in Dallas, Tex., last week, at which two propositions were considered. One to permit the road to be sold as advertised, and the other to accept an offer made to pay off the judgment and extend the line to a connection with the Texas & St. Louis. The board reached no final conclusion.

Toledo, Ann Arbor & North Michigan.—This company has just executed a contract with a syndicate to connect the southern and northern divisions of the road by building 42 miles of road from South Lyons, Mich., to Owosso. The connection between the two divisions has been hitherto filled by using the lines of the Grand Trunk between the two points, a much longer route than the one to be built. The contract provides for the completion of the new road by Nov. 1 next, when the company will have a continuous line from Toledo, O., to St. Louis, Mich., 145 miles.

The company has also contracted with other parties to build an extension of the road from the present northern terminus at St. Louis to Mt. Pleasant, 20 miles. The work is to be done by Nov. 1, and this extension will carry the road into the best portion of the white pine district and will make the line 165 miles long from Toledo to Mt. Pleasant. The chief object of the last-named extension is to secure lumber freight for the cars which now go northward from Toledo loaded with coal.

Toledo, Cincinnati & St. Louis.—A bill in equity has been filed in the United States Circuit Court by a holder of car-trust bonds, asking for himself, and on behalf of others who may join in the suit, that the trustees be instructed to sell a large number of cars owned by the trust and apply the proceeds to the payment of the principal and overdue interest on the bonds. The complaint sets forth that a large number of cars were leased to the company in 1882, on which car-trust bonds to the amount of \$325,000 were issued, but since August, 1882, no rentals or payments of any kind have been made on these bonds; that a majority of the bondholders have notified the trustees to take possession of and sell the cars, and the suit asks that the trustees may receive the necessary authority to do so and apply the proceeds of the sale as stated.

Uster & Delaware.—The town of Harpersfield, N. Y., has made application to the New York Railroad Commissioners for an order directing this company to complete the extension of its road from Stamford, N. Y., to Oneonta, or to refund \$100,000 in bonds which were given by the town 19 years ago to aid in the construction of the road, then known as the Rondout & Oswego. The road was originally intended to run from Rondout to Oneonta, but it has never been built further than Stamford, no part of the track being in the town of Harpersfield. The present company acquired possession of the road through a foreclosure sale.

Virginia Midland.—This company, forming part of the Richmond & Danville system, now announces the payment of a back coupon on the cumulative income mortgage bonds, and on July 1 the Central Trust Co., of New York, will pay the 3 per cent. coupon which fell due July 1, 1884. This issue of cumulative income bonds is very similar in form and tenor to the cumulative debenture mortgage bonds of the Richmond & Danville.

Wabash, St. Louis & Pacific.—The strike, or lock-out, in the repair shops of this road, which began two weeks ago, still continues, the shops remaining closed. So far there have been no disturbances among the men. A meeting was held in Moberly, Mo., June 28, at which the men passed a resolution that they would not go back to work unless all the men were taken on. Representatives from the shops at Springfield and Decatur, Ill., were present, and stated that the men on strike there would unite in this action.

The Receivers report that on March 1 last their cash account was overdrawn \$65,998, and that actual receipts for the quarter to May 31 were \$5,765,475. The disbursements on all accounts were \$5,836,246, and on May 31 the overdraft was increased to \$126,769. There were \$250,000 certificates issued during the quarter, making \$635,000 issued in all.

West Jersey.—This company's statement for May and the five months to May 31 is as follows:

	May.	Five months.
	1885.	1884.
Earnings.....	\$96,098	\$102,969
Expenses.....	60,407	69,060
		\$39,745
		\$33,909
Net earnings.....	\$35,691	\$33,909
Interest and rentals.....		\$5,474
		\$9,112
Surplus.....		\$40,250
		\$53,091

This shows for the five months a decrease in gross earnings of \$15,889, or 3.7 per cent.; an increase in expenses of

\$1,090, or 0.4 per cent., and a resulting decrease in net earnings of \$16,479, or 10.8 per cent. The decrease in interest and rentals was \$3,638, or 3.7 per cent., leaving a decrease of \$12,841, or 24.2 per cent., in the surplus.

West Penn & Shenango Connecting.—On application of the creditors, the United States Circuit Court has appointed James L. Blair Receiver of this road. The company has a line from Butler, Pa., to a connection with the Shenango & Allegheny road. The road was built to connect that road with the Pennsylvania branch to Butler.

ANNUAL REPORTS.

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Chicago & Western Indiana.

This company owns a line which forms the entrance into Chicago of the Chicago & Atlantic, the Chicago & Eastern Illinois, the Chicago & Grand Trunk, the Louisville, New Albany & Chicago and the Wabash, St. Louis & Pacific roads.

The road is 22 miles long and has four tracks for its entire length. There are also 10 miles of sidings and 34 miles of yard tracks, making a total of 132 miles of track, of which 52 miles are leased to the Belt Railway Co., of Chicago, a subordinate corporation. The report is for the year ending Dec. 31.

The company owns 12 locomotives; 100 gravel, 50 stone, 1 wrecking and 5 caboose cars; 20 hand cars. Most of this equipment is used by the Belt Co., which also leases and operates the elevator "Indiana" (owned by this company), which is of 1,500,000 bushels capacity.

The general account, condensed, is as follows:

Capital stock.....	\$5,000,000
Funded debt.....	8,806,667
Sinking fund.....	825,967
Bills, accounts and interest payable.....	124,610
Income account.....	49,718
Total.....	\$14,806,962
Cost of property.....	\$14,297,790
Materials on hand.....	16,014
Accounts due.....	327,488
Cash, treasurer.....	111,183
" Trustee.....	63,302
" Drexel, Morgan & Co.....	81,285
	14,896,962

The funded debt consists of \$10,500,000 general mortgage bonds issued, less \$1,603,333 canceled on Chicago & Grand Trunk account.

As the several companies using the road keep their own accounts, no statement of earnings and expenses can be made. The receipts and expenditures were:

Cash on hand Jan. 1.....	\$97,804
Materials on hand Jan. 1.....	16,438
Accounts receivable Jan. 1.....	16,245
Cash from Drexel, Morgan & Co., trustees, etc.....	687,754
Rents and sales of surplus property.....	149,711
Sundry accounts collected from lessees.....	382,337
Total.....	\$1,350,287
Paid on property accounts.....	\$560,554
Vouchers, bills payable and sundry accounts.....	469,067
Paid on account of lessees.....	174,348
Surplus over interest returned to lessees.....	181,22
Materials on hand Dec. 31.....	16,013
	1,239,104

Balance, cash, Dec. 31..... \$111,183

The President's report says: "This company was organized June 6, 1879, and the road was opened for traffic in May, 1880. Upon Jan. 28, 1882, a consolidation was effected with the South Chicago & Western Indiana Railroad Co., and the Chicago & Western Indiana Belt Railway Co., under the name of the Chicago & Western Indiana Railway Co. That portion of the road lying between South Chicago and the intersection of the Chicago, Milwaukee & St. Paul Railway, together with the Indiana elevator, has been leased to the Belt Railway Co., of Chicago, and is now operated by it. * * * At present there is no new work contemplated or under way other than the completion of Dearborn station and train sheds, and Chicago & Northwestern viaduct. The company has still among its assets a large amount of surplus property situated between Polk and Van Buren streets, which was acquired with a view to locating the depot on Van Buren street as originally designed. The opening of Dearborn street from Jackson to Polk street has very greatly increased the value of the property, so that when sold it will be at a handsome profit above its cost."

BELT RAILWAY, OF CHICAGO.

This subordinate company operates 32.45 miles of main track, with 30.89 miles of second track and 20.80 miles of sidings; a total of 74.14 miles of track, of which 52 miles are leased from the Chicago & Western Indiana Co. It owns 8 locomotives, leasing the rest of the equipment used from the same company.

